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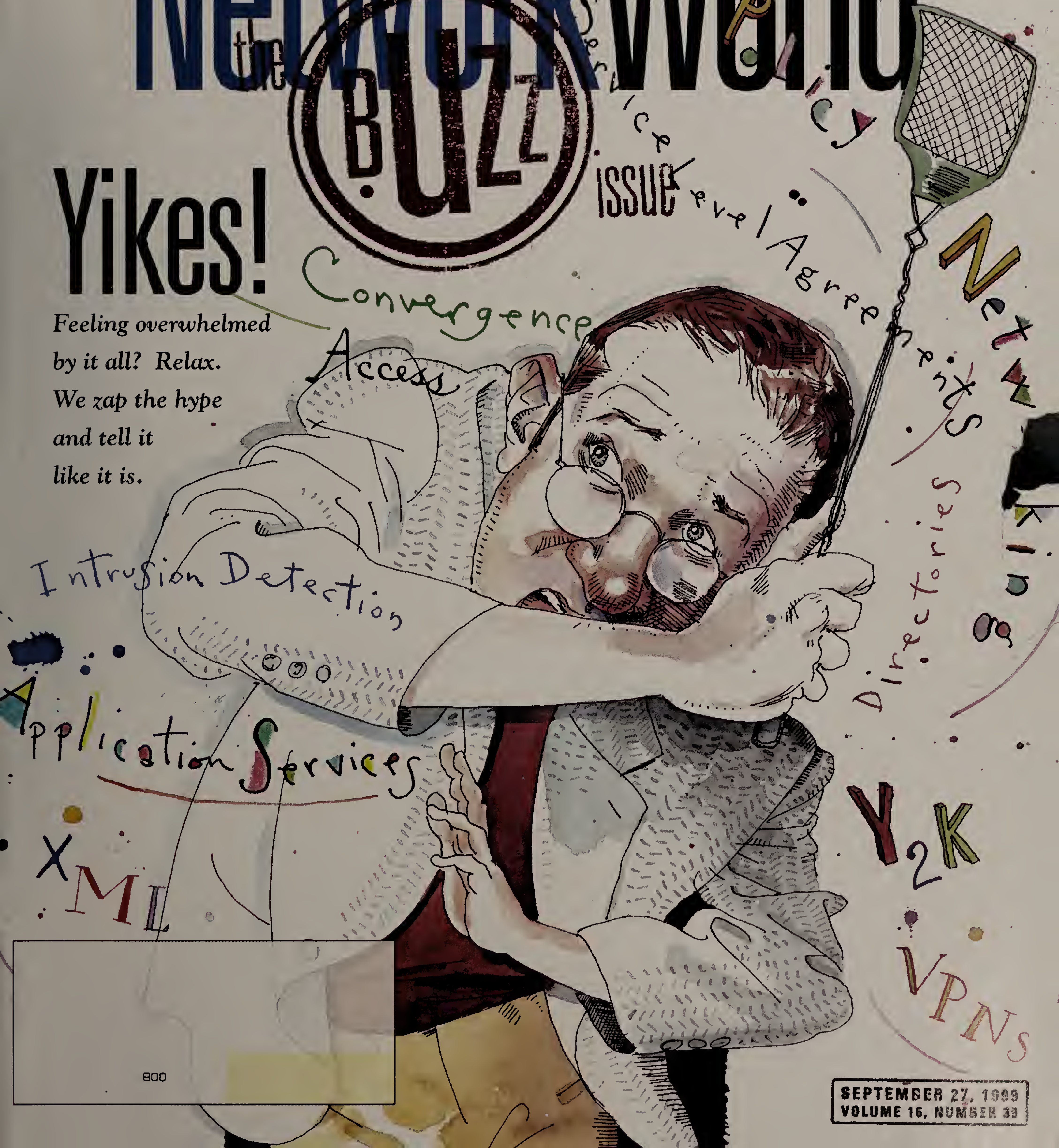

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SEPTEMBER 27, 1999
VOLUME 16, NUMBER 39

"I mean, I'm a CNE. Leaving NetWare was a nervous experience for me. But now, every server we have is running on Windows NT. And it's exceeded my expectations, especially with file and print, which is critical to us as a law firm. Our print server is handling 30 million pages a year, and we never have to touch it. So I'd say it's been wildly successful."

Eric Schmidt, Director of Information Services, Bricker & Eckler LLP
on switching to Microsoft® Windows NT® Server 4.0 from Novell NetWare

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THIS WEEK ONLINE

Help Desk. A user's company is moving to a new building and he wants advice on the best way to connect the new site to the Internet. His choices: asymmetrical digital subscriber line, ISDN and cable-modem service. See which option Help Desk Editor Ron Nutter recommends, then jump in with your suggestions and comments. **DocFinder: 4839**

IPvUgh. IPv6 was designed to save the Internet from its own success, what with its expanded address space and other features. Of late, we've seen Vint Cerf and other IPv6 backers make appeals to Microsoft to add IPv6 support to Windows 2000. But Associate News Editor Michael Cooney says "bah!" Enhancements to the current IPv4 make him wonder if upgrading to the new version would be worth all the trouble. **DocFinder: 4840**

Encryption. Fusion users disagree on the government's announcement that it will relax its encryption export requirements. One says the proposal contains language that would lessen our civil rights, by not requiring that the government show how it obtained information from an encrypted file. Another says it's about time to relax the standards because it's unfair that banks and other financial institutions could use high-level security but individuals could not. What do you think? Jump into the discussion. **DocFinder: 4742**

Directories. Need to stay on top of the fast-changing directory world? Dave Kearns' new newsletter, Network World Fusion Focus on Directories, is for you. Check out the archive for this free, twice-weekly newsletter before signing up. **DocFinder: 4841**

How to get onto Network World Fusion

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.

NetworkWorld

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HOW TO CONTACT US

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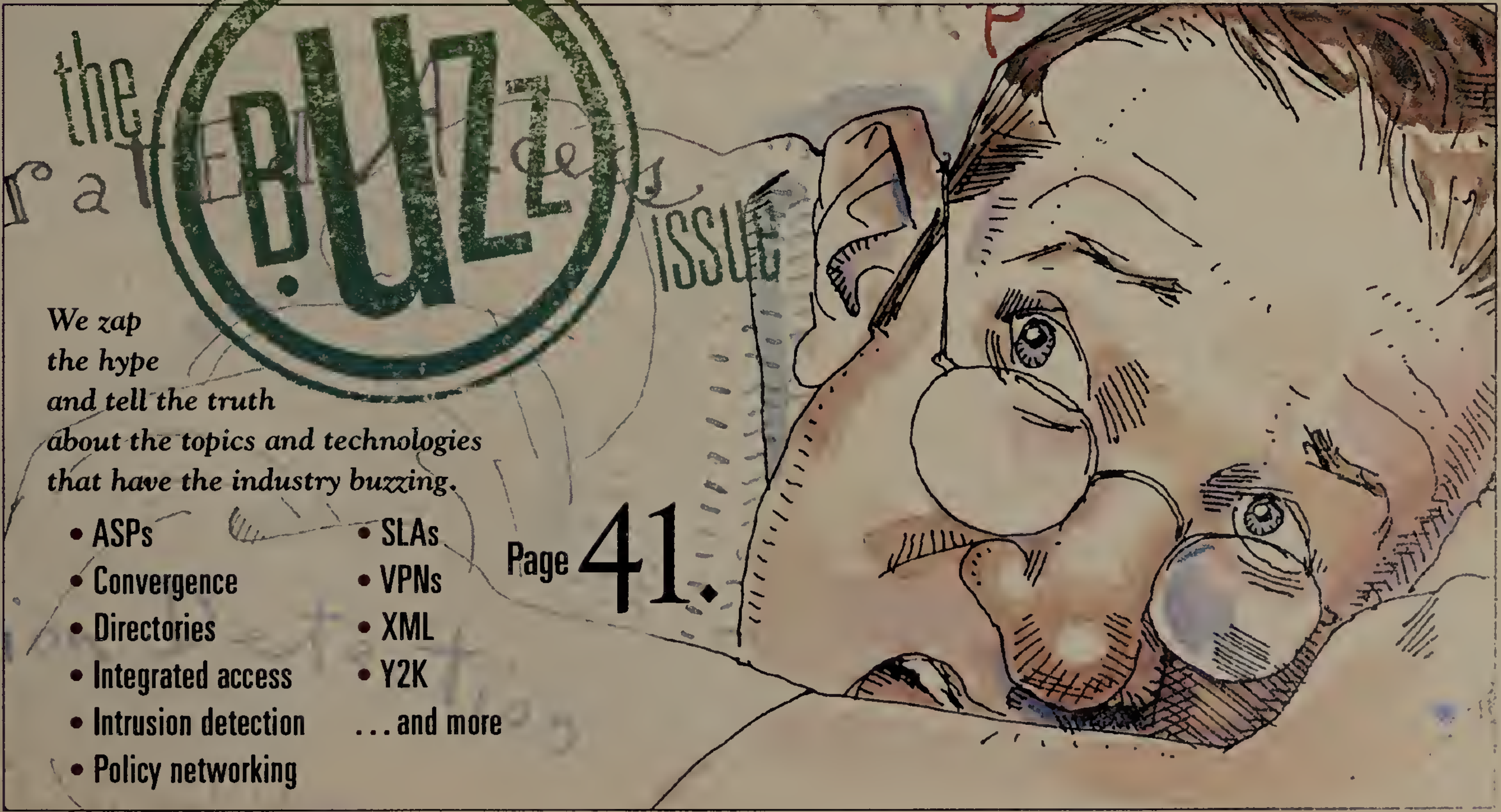

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Veteran protocol lands new role as multimedia star

SOCKS protocol emerging as secure method for sending multimedia applications over the Internet.

BY CAROLYN DUFFY MARSAN

Maybe you *can* teach an old dog new tricks. The 9-year-old SOCKS protocol — originally developed as a general-purpose proxy — is emerging as one of the best ways to secure multimedia applications across the Internet.

The latest version of SOCKS offers network managers an easier way to run videoconferencing and video and audio streaming through firewalls, which has been difficult and time-consuming. SOCKS V5 does this by providing a single and powerful method of authenticating users and managing security policies for all Internet applications, including multimedia.

A growing number of products support SOCKS V5, including firewalls from Novell and Milkyway Networks; extranet-oriented virtual private networks (VPN) from Hewlett-Packard and Aventail; and real-time conferencing applications such as Lotus' Sametime. IBM is expected to announce support for SOCKS V5 in its firewall this week.

The role of SOCKS V5 in multimedia security will be discussed at the second annual SOCKS developer's conference today in Santa Clara, Calif. About 150 developers and enterprise customers are expected to attend.

"These newer streaming protocols are very complex. Securing them is a real challenge," says Saqib Jang, director of marketing at NEC Systems. A leading proponent of SOCKS, NEC licenses its SOCKS V5 server software to Aventail, IBM, HP and others. "SOCKS V5 is really the first workable solution for multimedia across the Internet."

Without SOCKS V5, network managers are running into problems getting multimedia applications to work through their firewalls. Just ask Ray Lincolnhol, a product specialist with Baan Indirect Channels in Grand Rapids, Mich. Lincolnhol's group uses Microsoft's NetMeeting to conduct videoconferences over the Internet with resellers and customers. However, Baan had to set up a server outside the firewall to host the videoconferences.

"We don't employ a great deal of security right now," Lincolnhol admits, adding that Baan doesn't share any sensitive or proprietary data over the videoconferences, just "generic product demonstrations."

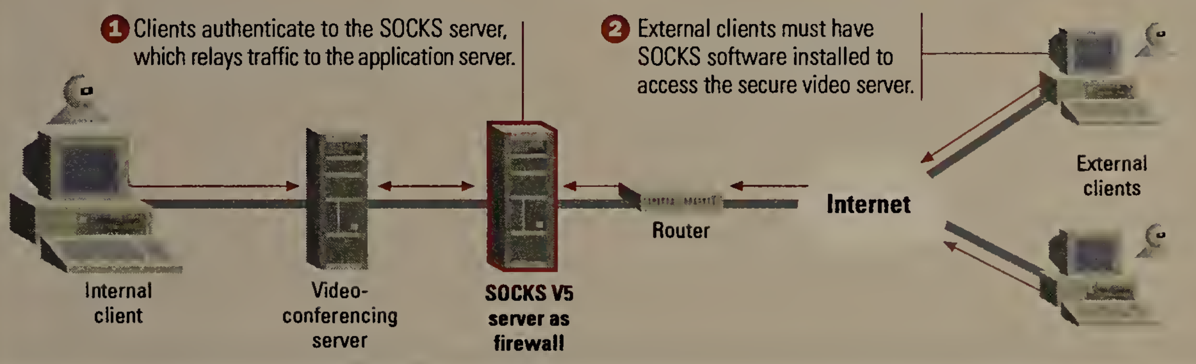
Marketstar, an Ogden, Utah, marketing firm, also set up a server outside its firewall to handle videoconferences over the Internet with resellers. But with this workaround, the company can't use the chat, file transfer, whiteboarding or application-sharing features of its EnVision desktop conferencing system from Sorenson Vision.

"We can communicate with audio and video, but we

See **SOCKS**, page 120

SOCKS V5 secures multimedia traffic

A SOCKS V5 server, used as a firewall, acts as a proxy server between a videoconferencing server and clients. Because the SOCKS server supports many multimedia protocols, network managers don't have to open unsecured holes in their firewalls to do videoconferencing.



① Clients authenticate to the SOCKS server, which relays traffic to the application server.

② External clients must have SOCKS software installed to access the secure video server.

SBC slapped with penalty in Texas DSL competition case

Rivals say case demonstrates the lengths that some RBOCs will go to to impede competition.

BY TIM GREENE

AUSTIN, TEXAS — SBC Communications last week got slapped with an $845,000 penalty in Texas for not playing fair with two DSL service providers. The case documents the kind of foot-dragging that upstart carriers say they still face regularly from regional Bell operating companies.

SBC's behavior in this instance was so egregious that the chairman of the U.S. House Commerce Committee is investigating the situation to determine whether SBC is stifling the deployment of digital subscriber line (DSL) services.

Most of the Bells have been slow to deploy DSL offerings. But competitive local exchange carriers (CLEC) have been aggressive in trying to roll out DSL services as inexpensive alternatives to T-1 services, which are cash cows for the Bells.

In the just-completed case before the Texas Public Utility Commission (PUC), SBC got caught withholding documents and presenting witnesses who didn't have full knowledge of what they were supposed to testify about. DSL providers Covad Communications and Rhythms NetConnections were the injured parties.

While the SBC case is an extreme example of the tactics RBOCs will employ to impede competitors, it is in some ways typical, according to Royce Holland, chairman of the Association for Local Telecommunications Services, a group that represents competitive local carriers.

"We've seen this and will continue to see this until the regulatory commissions start slapping them with big material fines," says Holland, who is CEO of CLEC Allegiance Telecom. Holland says that to an RBOC, an $845,000 fine is barely a tap on the wrist.

Stifling competition keeps telecom prices higher than they would be otherwise, according to U.S. Rep. Tom Bliley (R-Va.), chairman of the House Commerce Committee. Bliley is seeking more information about the SBC case. Competition "will ensure that consumers have access to better, more innovative services, at lower prices," he said in a letter to Edward Whitacre, SBC Chairman and CEO.

The reluctance of RBOCs to lease their facilities to competitors is understandable, says Claudia Bacco, a DSL analyst for TeleChoice, a

See **SBC**, page 120

> ***"The arbitrators' ruling is troubling and raises a substantial issue as to whether SBC is complying with its legal 'duty' under the 1996 [telecommunications] act."***

U.S. Rep. Tom Bliley (R-Va.)

NEWS BRIEFS, SEPTEMBER 27, 1999

EarthLink, MindSpring become one

EarthLink Network and MindSpring Enterprises last week tied the knot in a merger that will spawn a new ISP with more than three million customers. The new public company will retain the EarthLink name but will be headquartered at MindSpring's home base in Atlanta, according to the companies. MindSpring stockholders will get one share of the new company's stock for each share of MindSpring stock, while EarthLink stockholders will receive 1.615 shares for each share of EarthLink stock. The companies expect the new ISP's customer base to be second only to that of America Online. The merger is expected to be complete in next year's first quarter and will leave intact EarthLink's current business alliance and contractual agreements with Sprint.

MCI WorldCom, Sprint courtship?

The companies aren't printing up new stationery just yet, but merger talks between MCI WorldCom and Sprint have become more serious as of late, according to a report last week in the *Wall Street Journal.* Obstacles remain and the deal is not imminent, sources told that newspaper, but insiders are hopeful that a deal can be reached that would combine the nation's second- and third-largest long-distance carriers. Purchasing Sprint would give MCI WorldCom a coveted nationwide wireless network and bolster its long-distance capacity.

PC makers have Rambus headache

High-end PC makers are facing the prospect of costly, time-consuming repairs on perhaps hundreds of thousands of ready-to-ship machines because of a problem with the Rambus memory technology in Intel chipsets, according to published reports. The existence of an extra, unneeded memory slot is apparently the cause of the problem, which could prompt a workaround that severely limits the memory of Rambus-equipped PCs.

New servers are not likely to feel the effects of the problem, according to one analyst. "It doesn't make any sense at all to use Rambus, except in very low-end server platforms based on desktop chipsets," says Peter Glaskowsky, an analyst with Microdesign Resources.

More Windows 2000 beta rolling

Nearly 300 Windows 2000 beta testers this week are expected to receive the first beta of the DataCenter version of the operating system. DataCenter is the high-end incarnation of the operating system and is the fourth and last version to enter beta. DataCenter is designed for fault-tolerant computing, such as data warehousing, server consolidation and large-scale simulations in science and engineering, as well as online transaction processing. It is expected to ship three to four months after the other versions of Windows 2000, which are slated for release by year-end.

IPO on tap for McAfee.com

Having acquired the PC security software vendor only last December, Network Associates last week signaled its intention to spin off McAfee.com in an initial public offering the company hopes will raise in excess of $57 million. McAfee.com lets people check their PCs remotely for various performance problems, fixes and upgrades, including Year 2000 compliance. No target share price was announced.

New goodies for Linux lovers

The Linux bandwagon will be rocking and rolling in the next few weeks. Cybernet Systems is expected to make available a suite of Linux-based thin server/Internet appliance software. The NetMax line will include a Web server, a file server and a firewall. Meanwhile, Inprise is expected to answer the call from customers for a Linux version of C++ Builder, and Red Hat Software is expected to announce Version 6.1 of its operating system.

Encore for Ascend execs

Life after the Lucent buyout has begun in earnest for former Ascend executives Mory Ejabat, Jeanette Symons and Robert Dahl. The trio has just founded Zhone Technologies in Oakland, Calif., three months after the completion of Lucent's $24 billion acquisition of Ascend. While details are being closely guarded, it will come as no surprise that Zhone will be hawking next-generation voice and data communications equipment. The Zhone Web site — www.zhone.com — touts the company as "a new breed of start-up" that is "funded with an exceptional amount of capital." In other words, this start-up won't be working out of a garage.

Ejabat has joined forces with other former Ascend executives to form start-up Zhone Technologies.

IBM speeding up Web data for sub-PC clients

BY MARC SONGINI

RESEARCH TRIANGLE PARK, N.C. — IBM will soon roll out a product for easing Internet device access to Web resources.

The product, dubbed Transcoder, is software that works by sitting on a Web or proxy server and shrinking 'Net data for a tailor-made fit in handheld or laptop devices. For customers, Transcoder software will extend Web information to a variety of clients, such as PalmPilots or smart pagers, that are too small to handle full-blown files or messages. Transcoded data can also be delivered via a Java servlet, an application that sits on a Web server and is launched to the client, IBM says.

Most mobile devices access corporate Web servers via low-bandwidth connections, but the transcoding technology could cut some of that expense by letting users look at only small portions of content rather than waiting for an entire Web page to load, IBM claims.

Transcoder, originally known as Content Adaptation Framework, is fresh from IBM's Yorktown Heights research lab (*NW,* June 29, 1998, page 1). The software is now available in a beta version for Windows NT and will become part of the IBM Networking Computer Software Division's SecureWay lineup by March.

The company will offer Transcoder as a stand-alone product or bundled with other software, such as IBM's WebSphere Web-hosting and software development product, says Snehal Parikh, an IBM brand manager. Transcoder will be available for resale with other vendors' Web offerings.

While IBM sells products with features such as Web-to-host access, this is the company's first offering that can reshape 'Net data.

For instance, while sitting on a Web server, Transcoder can make a variety of other adjustments — such as changing color Web pages or photos to black and white. Users or IS professionals can decide how much of a graphic's resolution or richness they want.

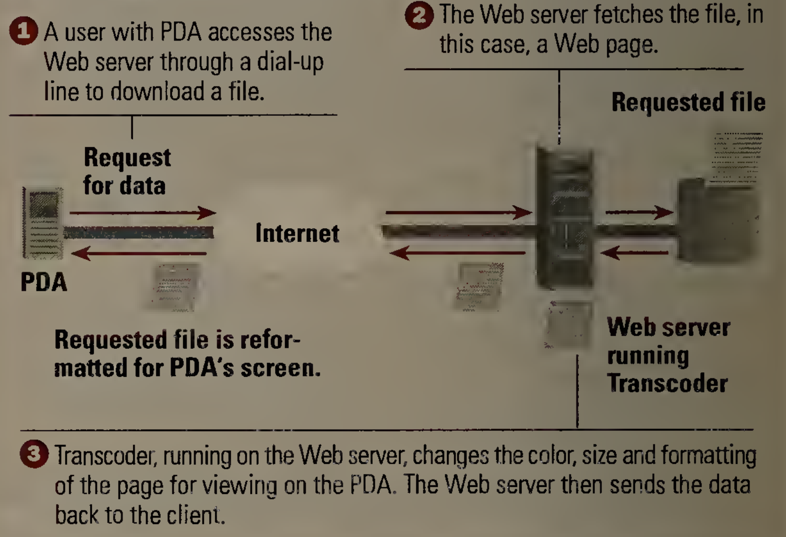
Other vendors, such as Attachmate, offer products similar to Transcoder, Parikh acknowledges. However, he says IBM's Transcoder can handle a wider variety of data with a greater level of customization and integration than competitors.

Transcoder is slated for announcement next month and will ship sometime in early 2000. Pricing has not been set yet.

IBM: www.ibm.com

Downsized Web data

Transcoder can be configured to reformat different kinds of Web data for handheld devices.


① A user with PDA accesses the Web server through a dial-up line to download a file.
② The Web server fetches the file, in this case, a Web page.
Requested file
Request for data
Internet
PDA
Requested file is reformatted for PDA's screen.
Web server running Transcoder
③ Transcoder, running on the Web server, changes the color, size and formatting of the page for viewing on the PDA. The Web server then sends the data back to the client.

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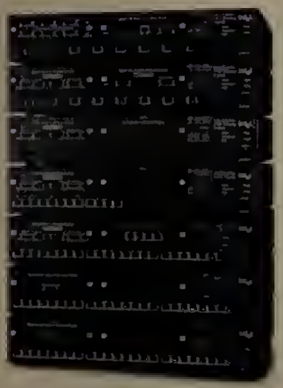

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Caching service has int'l flair

BY DENISE PAPPALARDO

CAMBRIDGE, MASS. — Adero, a new service provider, is about to launch a caching service that will let customers bring their Web site content closer to Web surfers around the world.

Adero, a start-up based in Cambridge, Mass., is expected to officially launch its AderoWorld caching service next week.

AderoWorld will let customers replicate part or all of their Web site content on servers in 19 countries, including South Africa, Australia and Italy.

Adero is equipping its data centers, which will reside in 30 countries by year-end, with Sun servers running Inktomi's Traffic Server and WebSpective's caching and tracking software. Adero is dividing its 19 networked data centers into five regions. Customers can choose to have their content cached in just one region, or all five.

Customers that subscribe to the AderoWorld service simply need to make a change to their Domain Name System that will allow the server to replicate its content onto AderoWorld's Web servers around the world. Users access the replicated data locally via a Web browser.

Users today can buy caching services from ISPs such as Cable & Wireless and Digex, or from Web hosting companies such as Exodus Communications and Digital Island, which use Inktomi's caching technology. Users can also opt to go with a service provider that specializes in caching and replication services, such as Sandpiper Networks, SkyCache, and now Adero.

What's different about Adero is that the firm is primarily focused on bringing its content closer to users overseas, says Ullas Naik, senior vice president of research at First Albany, a consultancy in Albany, N.Y. Competitors such as Exodus and Sandpiper have more of a domestic focus when it comes to caching and replicating Web content. Adero says that while the Internet in the U.S. has its fair share of bottlenecks, the Internet overseas typically has more.

Latency in international markets is huge compared with the U.S., Naik says. It's not uncommon for users in some areas of Europe to wait 5 to 6 seconds for one page to load, he says. Bringing content closer to users is expected to reduce the amount of time it takes a Web surfer to download content, which is important when you're trying to sell merchandise over the Internet.

But Adero's international edge will last only a few months because just about every service provider that offers Web hosting services, from AT&T to Exodus, is expanding its international reach.

Before year-end Adero is also expected to roll out the second version of its AderoWorld service, which will include its GeoTraffic Manager, says Rob Carney, co-founder and director of sales at Adero. GeoTraffic Manager will intelligently route Web surfers to the Web server that is closest to them based on their IP address.

Digital Island announced a similar service this week that it calls TraceWare. TraceWare, which costs about $2,000 per month in addition to standard monthly Web hosting costs, is also designed to determine the fastest way to deliver Web content to Web surfers based on their domain name registration.

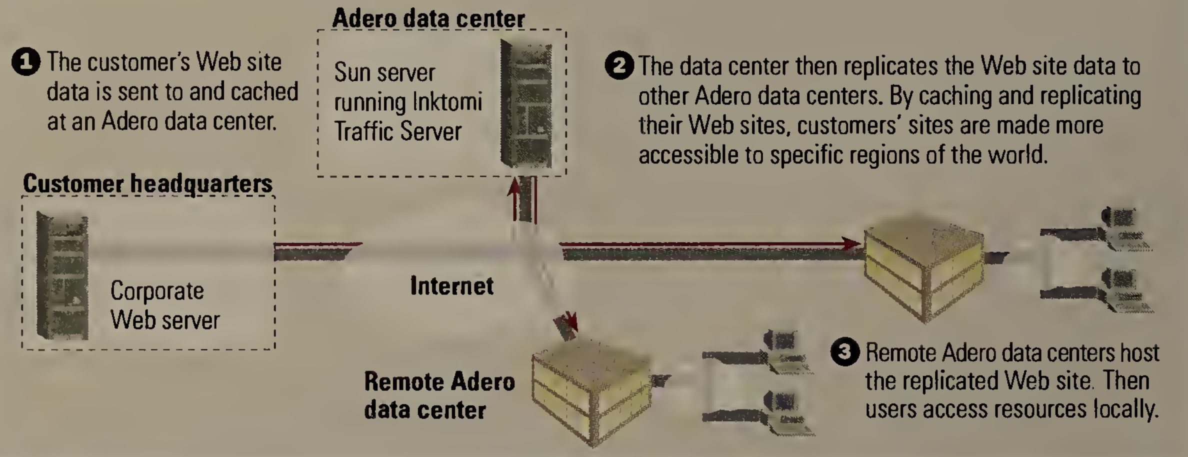
Adero has received $8 million in funding from Fidelity Ventures and M/C Venture Partners since the company was created in 1998.

The AderoWorld service and its monthly rates are expected to be available next week.

Adero: www.adero.com

Delivering Web content around the world

AderoWorld will let business users cache and replicate their entire Web sites at any of Adero's data centers around the world.



❶ The customer's Web site data is sent to and cached at an Adero data center.

❷ The data center then replicates the Web site data to other Adero data centers. By caching and replicating their Web sites, customers' sites are made more accessible to specific regions of the world.

❸ Remote Adero data centers host the replicated Web site. Then users access resources locally.

Be a

Net Know-It-All

For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2467 in the DocFinder box.

This week's question:

Who replaced Bob Levine as Cabletron's CEO back in 1997?

www.nwfusion.com

QoS put to the test

BY JEFF CARUSO

A dozen vendors will test their quality-of-service implementations against each other this week, covering QoS for LANs, WANs and policy-based networking.

Sponsored by the QoS Forum, the interoperability tests represent the first time such a range of QoS standards has been tested at one time. The vendors will test the IEEE's 802.1p standard with the Internet Engineering Task Force's Resource Reservation Protocol (RSVP), Differentiated Services (Diff-Serv) and Common Open Policy Service (COPS).

The participating vendors include router and switch makers Cisco and Nortel Networks, server operating system vendors Microsoft and Novell, test equipment makers Ixia and Netcom, and policy server vendors Intel and Orchestream (see graphic).

The tests, which will be conducted in Campbell, Calif., are closed to the public and are only for equipment engineers who want to work out the technical details of making their equipment interoperate.

"It's a good thing these guys are getting together because if QoS doesn't run end-to-end, there's really no point in using it over the Internet," says Scott Baker, manager of network services at Playboy Enterprises.

Playboy has a lot of Extreme Networks switches in its LAN and in November plans to turn on the built-in QoS capabilities to run video over its internal network. Baker says Playboy can do this easily because it uses a single vendor's equipment throughout. If other vendors' equipment or the Internet come into play, it's much more difficult to ensure network traffic gets the QoS it needs.

QoS standards attempt to establish priorities for certain types of traffic. In an IP world, network traffic all has the same priority and gets through the network in a best-effort manner. Vendors are trying to add levels of QoS to make sure that time-sensitive traffic — such as voice, video or critical applications — gets through the network faster.

Unfortunately, QoS efforts have been disjointed. IEEE 802.1p represents a way of tagging Ethernet frames with a certain priority level. RSVP is a protocol that applications can use to request a level of QoS from network devices. Diff-Serv is a QoS standard aimed at the WAN, and COPS helps management tools set QoS policies at a central location and implement the policies in network hardware.

"I think there's still some confusion about how to implement QoS in the network," says Dan Dahle, an Intel marketing director. But he adds that some consensus is forming around the above technologies. Now it's a matter of getting everything to work together. ◪

QoS on the agenda

A dozen vendors are getting together to make sure their QoS technologies work together.

Vendors participating in interoperability tests this week:

- 3Com
- Cabletron
- Cisco
- Extreme Networks
- Hewlett-Packard
- Intel
- Ixia Communications
- Microsoft
- Netcom Systems
- Nortel Networks
- Novell
- Orchestream

Participants in the QoS Showcase at iBand3 in October:

- 3Com
- Hewlett-Packard
- Intel
- IPHighway
- Ixia Communications
- Microsoft
- Netcom Systems
- Nortel Networks
- Orchestream
- Xedia

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Bell Atlantic/Vodafone form wireless giant

BY DENISE PAPPALARDO

Bell Atlantic and Vodafone AirTouch last week announced a blockbuster joint venture that could deliver an array of new digital service options to wireless customers across the U.S. But don't expect to see many such services from the venture until it takes care of the daunting network integration project it faces.

The yet-to-be-named venture, which the companies expect to generate $15 billion in revenue next year, will combine Bell Atlantic's and Vodafone AirTouch's domestic wireless businesses.

The venture, owned 55% by Bell Atlantic and 45% by Vodafone AirTouch, will have 20 million customers from the start — double the number of customers using the AT&T Wireless or Sprint PCS nets.

But there is one thing that Sprint PCS and AT&T Wireless have that the joint venture won't have immediately — an integrated network that uses a common billing system.

Currently, Bell Atlantic offers a national wireless service, but Vodafone AirTouch does not. Vodafone AirTouch calling plans vary from region to region, as does the company's billing system.

"There will be a lot of digestion woes following this merger," says Bob Egan, an analyst at Gartner Group, a Stamford, Conn., consulting firm.

Having an integrated network and billing system will let the joint venture offer advanced billing options. Sprint PCS, for instance, can offer pooling of minutes, which lets a business share a certain number of minutes among all its employees regardless of their location.

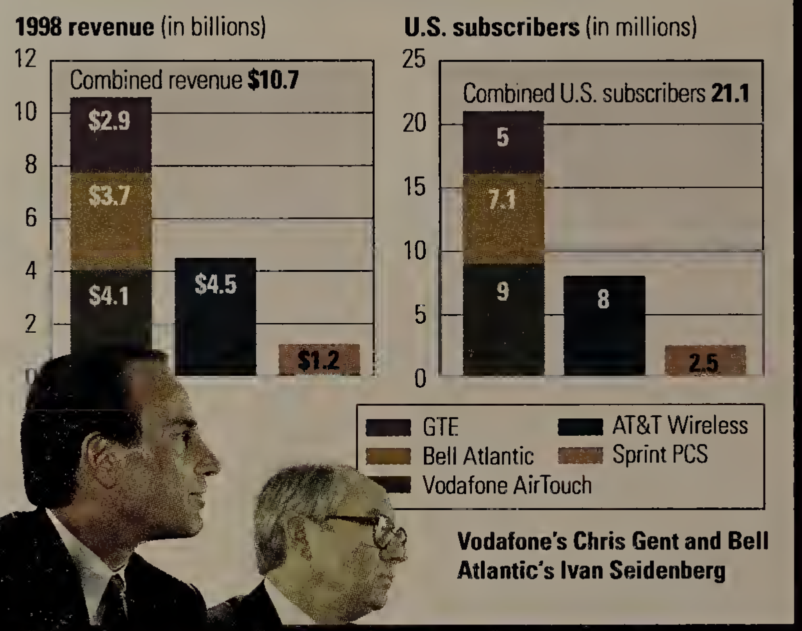
One thing in the joint venture's favor, however, is that the networks being united are based on Code Division Multiple Access technology.

While the joint venture should stir up even more competition in the already hotly contested U.S. wireless market, customers may not see much of an impact on pricing. That's simply because wireless prices have already dropped so far over the past year, down to 10 to 15 cents per minute for many business customers.

The joint venture is more likely to compete by delivering innovative services, observers say. Bell Atlantic, which is in the midst of acquiring GTE and its GTE Internetworking ISP, will be in a good position to offer wireless Internet access services through its new venture. ◪

Bell Atlantic stacks up

The new Bell Atlantic-Vodafone AirTouch joint venture (which will also include GTE's wireless business) will be the largest wireless service provider in the U.S. — by far.



Vodafone's Chris Gent and Bell Atlantic's Ivan Seidenberg

STEVEN BORNS

Compaq, Cabletron scuttle $1 billion OEM deal

Compaq taking $10 million equity stake in Cabletron's Spectrum management platform unit.

BY JIM DUFFY AND DENI CONNOR

HOUSTON — Cabletron and Compaq have scrapped an OEM arrangement that would have netted Cabletron $1 billion in revenue over three years. The move is consistent with Compaq's strategy to scale back its network products business and focus more squarely on computers and services.

The companies last week announced an amended resale relationship that essentially lets Compaq buy its way out of the big dollar OEM obligation, which Compaq inherited when it bought Digital in early 1998. The OEM agreement grew out of a deal struck by Digital and Cabletron as part of Cabletron's acquisition of Digital's Network Products Group in February 1998.

Under the new arrangement between Compaq and Cabletron, Compaq's systems integration arm will merely resell Cabletron hardware — along with several other vendors' network products — under the Cabletron brand name. Compaq will also invest more than $10 million in Cabletron's Spectrum unit and purchase an unspecified amount of Spectrum software over the next few years.

Compaq will no longer OEM the SmartSwitch 6000.

"We will not offer Compaq-branded networking products; however, we will continue to sell Cabletron products through our Professional Services Group," a Compaq spokesperson says.

The spokesperson says the equity investment in Spectrum was made independently of the decision to scrap the OEM deal. But a former Compaq executive says the investment in Spectrum was made to appease Cabletron for backing out of the OEM deal.

Cabletron expects its revenue to remain flat for at least the next two quarters, due in part to the restructured Compaq deal. The upside for Cabletron is that the company will still be selling products to Compaq for use in Compaq's internal network. Cabletron also expects to continue selling products to users of Compaq and Digital gear.

Analysts say Compaq's decision to invest in Cabletron's Spectrum business and purchase Spectrum technology should help Compaq buttress its systems integration business. Customers will need a management platform that is more sophisticated than Compaq's own Insight Manager as they look to tie their Compaq computers into heterogeneous networks that include midrange and mainframe systems, PBXs, and Internet access devices and appliances.

"Compaq doesn't have an enterprise-level management system vs. the Tivolis of the world," says Craig Johnson, principal at The Pita Group, a consulting firm in Portland, Ore. "That's something it has needed, especially on its integration business side. If Compaq goes in and tries to win a large contract, it needs to have that chip on the table." ◪

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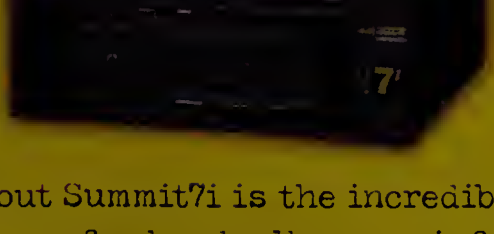

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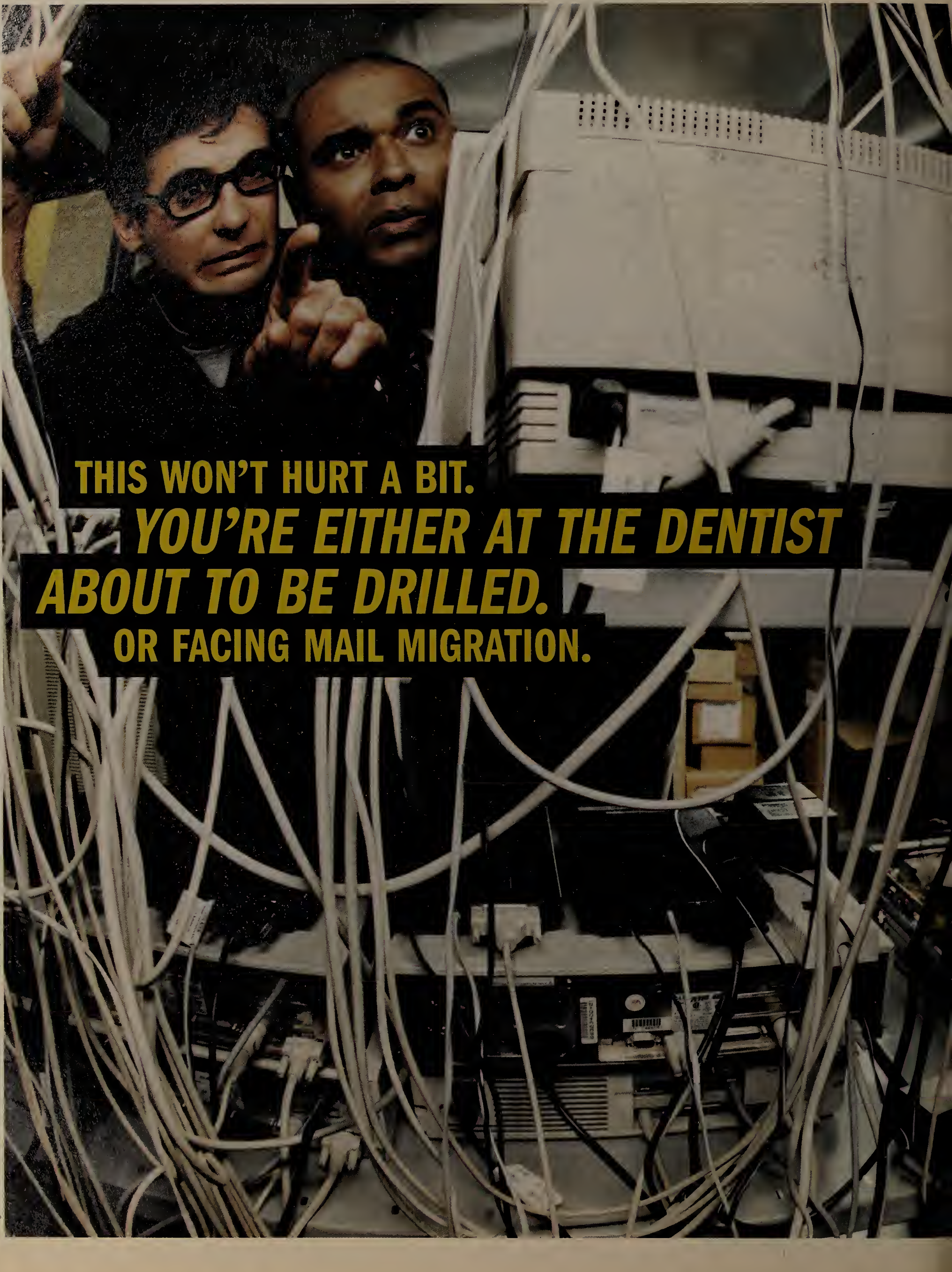
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Microsoft shapes its collaboration platform

BY JOHN FONTANA

Microsoft last week delivered the first pieces of a rich collaboration environment it hopes to build for corporate users.

The company unveiled three tools — based on its BackOffice suite of servers and Office 2000 — for building a desktop portal interface and simple applications and management functions. IT executives, however, will have to wait until next year for sophisticated document management, indexing and workflow tools to tie it all together.

Microsoft is trying to keep pace with the growing interest in knowledge management, which seeks to organize and index corporate data and applications for easy access from a single interface. The nebulous knowledge management concept, however, is a puzzle for IT executives. Large customers must not only alter corporate work habits but also lash together resources from file and Web servers, databases and the Internet.

"Knowledge management is something we see happening, but the tools are clunky and development is labor-intensive," says Greg Scott, IS manager for the Oregon State University College of Business.

Microsoft hopes to simplify efforts by offering a single interface, known as a desktop portal, based on Outlook 2000, and a set of collaborative applications built mostly on Exchange, SQL Server and Windows 2000. The servers are the guts of Microsoft's knowledge management platform.

Observers say the personalized desktop portal, where users can access a customized set of applications and data, is the wave of the future.

"If Microsoft wants to continue to own the desktop it had better have a portal desktop," says Tom Koulopoulos, an analyst with The Delphi Group in Boston.

Last week, Microsoft released its Digital Dashboard Starter Kit, a set of desktop portal templates for Outlook 2000. It also unveiled Outlook 2000 Team Folder Wizard, which automates the creation of collaborative applications based on Exchange public folders. The third tool, Team Productivity Update for BackOffice 4.5, lets end users create collaborative workspaces and incorporate SQL-based and third-party applications.

According to Bart Wojciehowski, group product manager for knowledge management at Microsoft, the three tools pave the way for more sophisticated collaboration services the company is developing.

The future services include search, index and workflow mechanisms and user management found in Active Directory, which ships with the forthcoming Windows 2000.

"What Microsoft is offering now is a taste of knowledge management, and it will get richer over time," says Warren Wilson, an analyst with Summit Strategies in Kirkland, Wash.

The richness will come from a set of server-based services, code-named Tahoe, that provide basic document management and search capabilities. The services are likely to be part of the next version of Exchange, code-named Platinum, which will ship next year. Platinum's object-based Web Store provides an index of its contents against which Tahoe can run.

Later this year, Microsoft is expected to release a set of tools for Office Developer, code-named Grizzly, to create workflows that incorporate data from Exchange and SQL Server.

Next year, Microsoft will add a set of services, code-named Polar, to BackOffice. Polar builds on the Team Productivity Tool released last week. Polar provides tools to create virtual work environments with menus of applications and tools for administrators to control the creation of the environments. ◪

Information gathering

Microsoft last week released three tools that begin to tie together BackOffice servers and Office 2000 to allow access from a personalized desktop. Additional services and tools are not likely to ship until next year.

What's available

Product	Description
Digital Dashboard Starter Kit	Set of templates to build desktop portals.
Team Folder Wizard	Creates Exchange public folder applications.
Team Productivity Update	Creates workspaces with links to applications.

What's to come

Product	Description
Tahoe	Document management, indexing services.
Grizzly	Tools to create workflow with Exchange and SQL.
Polar	BackOffice services to create, manage team workspaces.

Microsoft, DOJ may be far from finished

BY JOHN FONTANA

Closing arguments presented last week in the government's antitrust case against Microsoft may become just a footnote in a saga that could extend well into the next century.

While a trial ruling is now in the hands of Judge Thomas Penfield Jackson, the case appears headed for another courtroom.

Experts are confident that the proceeding will land in the District of Columbia Court of Appeals and quite possibly the Supreme Court. The appeals process alone would likely last at least a year after Jackson's ruling is final.

Last week in Washington, D.C., Microsoft's attorneys denied all the antitrust allegations against the firm, while the government reiterated claims that the company is a monopoly.

The Justice Department and 19 state attorneys general sued Microsoft in federal court, alleging that the software giant has engaged in illegal business practices, including anticompetitive behavior in the Internet browser market.

"Both sides did a strong job wrapping up their cases," says Hillard Sterling, senior litigator for Gordon & Glickson P.C. in Chicago. "But I'd be surprised if Judge Jackson finds in Microsoft's favor." Sterling says Jackson's silence during closing arguments showed he has already made up his mind.

Joseph Angland, an antitrust attorney with Dewey and Ballantine in New York, also thinks the government will prevail and that the case will go to the appeals court barring a last-minute settlement.

"At best, Microsoft proved that several years from now it might not have a monopoly power in the operating system market, but that is no defense," Angland says.

Sterling says Microsoft has a strong case for an appeal based on a point of law called tying, a centerpiece of the government's case. The government contends Microsoft tied its Internet Explorer browser to its operating system to leverage its strength in order to bury rival Netscape.

But in a ruling in a separate case, which grew out of the suit against Microsoft, the District of Columbia Court of Appeals said it was difficult for a plaintiff to prove unlawful tying of products in the technology market, according to Sterling.

"All Microsoft needs to do is prove plausible benefits from product integration," says Sterling, who thinks Microsoft will prevail on appeal.

Jackson's ruling is expected in four to six weeks, at which time both sides will submit written recommendations for a final ruling.

Jackson is expected to ask both sides to argue those recommendations before him. The final ruling is not expected until early next year.

The IDG News Service contributed to this report.

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Consumers could fork out more than $12 billion online this holiday season, almost triple what they spent over the same period last year, according to new research from Dataquest. However, the increase in traffic will swamp some online stores, and not all customers will get the level of service they might expect, other analysts warn. **DocFinder: 4837**

Senate: Y2K presents headaches, not disasters

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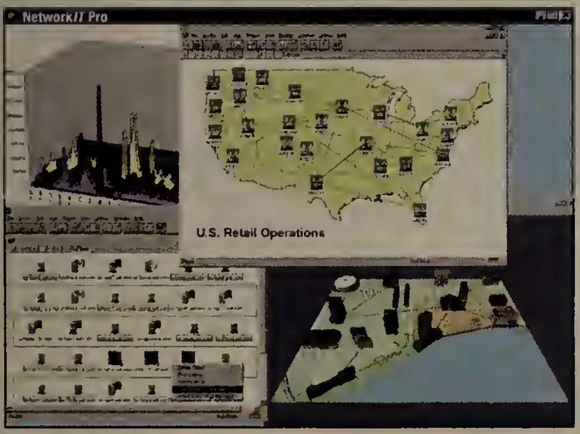

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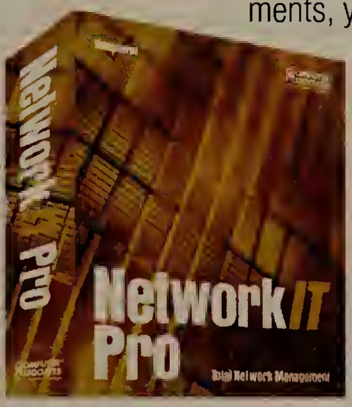

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1. What is the principal business activity at your location?
(check ONE only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities/Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
10. ☐ Education
11. ☐ Government
12. ☐ Military
13. ☐ Aerospace
14. ☐ Consulting (Indepeodent) *
15. ☐ Carriers/Service Providers
16. ☐ Internet Service Provider (ISP)
17. ☐ Manufacturing (Computer/ Communications/OEM)
18. ☐ Resellers of Computer/Network Products (VARs,VADs)*
19. ☐ Systems/Network Integrators*
20. ☐ Distributors (Computer/ Communications)*
21. ☐ Other (please specify) ____________

*Attn Consultants, Integrators, Distributors, Resellers: Please complete entire form based on ALL clients and your own business needs

2. P: What is your primary job function? (check ONE only)
S: What is your secondary job function? (check ALL that apply)

P S
☐ 1. ☐ Network Management
☐ 2. ☐ LAN Management
☐ 3. ☐ Datacom/Telecom Management
☐ 4. ☐ IS/IT/MIS/CIO/CTO/Systems Management
☐ 5. ☐ Internet/Intranet/E-Commerce Mgmt, Webmaster
☐ 6. ☐ Engineering Management
☐ 7. ☐ Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
☐ 8. ☐ Consultant (Independent)
☐ 9. ☐ Other (please specify) ____________

3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?
(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–N.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/ Workstations/PDAs)*
C ____ Servers
D ____ LANs
E ____ WAN Equipment
F ____ Carrier Services
G ____ Internetworking
H ____ Internet
I ____ Intranet E-Commerce
J ____ Extranet/Ecommerce
K ____ Remote Access
L ____ Peripherals *(including storage)*
M ____ Software
N ____ Service/Support

4. What is the total number of sites for which you have purchase influence?
(check ONE only)

1. ☐ 100+ 2. ☐ 50 – 99 3. ☐ 20 – 49 4. ☐ 10 – 19 5. ☐ 2 – 9 6. ☐ 1 7. ☐ None

5. What is the total number of Servers/Clients/LANs installed/planned at your location/ in your entire organization?
(check ONE box in each column)

SERVERS			CLIENTS			LANS		
At Location A		Entire Org. B	At Location C		Entire Org. D	At Location E		Entire Org. F
☐	1. 50,000+	☐	☐	1. 50,000+	☐	☐	1. 50,000+	☐
☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐	☐	2. 10,000 to 49,999	☐
☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐	☐	3. 1,000 to 9,999	☐
☐	4. 100 to 999	☐	☐	4. 100 to 999	☐	☐	4. 100 to 999	☐
☐	5. 50 to 99	☐	☐	5. 50 to 99	☐	☐	5. 50 to 99	☐
☐	6. 10 to 49	☐	☐	6. 10 to 49	☐	☐	6. 10 to 49	☐
☐	7. 1 to 9	☐	☐	7. 1 to 9	☐	☐	7. 1 to 9	☐
☐	8. none	☐	☐	8. none	☐	☐	8. none	☐

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)

CORPORATE:
1. ☐ Entire Enterprise/Multiple Enterprises
2. ☐ Division/Multiple Divisions
3. ☐ Department
4. ☐ None

B. Involvement (check ALL that apply)

1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees at your location/in entire organization?
(check ONE in each section)

A. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

B. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

8. Please indicate the Internet/Intranet/LAN/WAN products/services that you are currently involved in purchasing or plan to purchase (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

INTERNET/INTRANET

A B
☐ 01. ☐ VPN Equipment
☐ 02. ☐ VPN Services
☐ 03. ☐ Firewalls/Security/Encryption
☐ 04. ☐ Electronic Commerce
☐ 05. ☐ Web Servers/Software
☐ 06. ☐ Web Enabled Call Center Tools
☐ 07. ☐ Voice/Video Over IP (IP Multicast Routing)
☐ 08. ☐ Internet Services
☐ 09. ☐ Web Hosting
☐ 10. ☐ Host Access
☐ 11. ☐ Web Development Tools
☐ 12. ☐ Management/Monitoring Software
☐ 13. ☐ Web Based Management Tools
☐ 14. ☐ Web Based Collaboration/ Groupware
☐ 15. ☐ Caching/Load Balancing Products
☐ 16. ☐ Other Internet/Intranet

LOCAL-AREA NETWORKS/INTERNETWORKING

A B
☐ 17. ☐ Local-Area Networks
☐ 18. ☐ Network Operating System Software (NOS)
☐ 19. ☐ Intel Based Servers
☐ 20. ☐ Intel Based Multiprocessor Servers
☐ 21. ☐ RISC Based Servers
☐ 22. ☐ Clustered Servers
☐ 23. ☐ Print Servers
☐ 24. ☐ Routers
☐ 25. ☐ Layer 2 Switches
☐ 26. ☐ Layer 3 Switches
☐ 27. ☐ Layer 4 Switches
☐ 28. ☐ ATM Switches
☐ 29. ☐ Token-Ring Switches
☐ 30. ☐ Network Storage (NAS, SANs)
☐ 31. ☐ Storage/Backup (Optical, Disk, Tape, RAID)
☐ 32. ☐ Network Test/Diagnostic Tools
☐ 33. ☐ UPS
☐ 34. ☐ Network Interface Cards (NICs,PCMCIA)
☐ 35. ☐ Hubs/Intelligent Hubs/ Stackable Hubs
☐ 36. ☐ Cables,Connectors, Baluns
☐ 37. ☐ SNMP Platform
☐ 38. ☐ Management Frameworks
☐ 39. ☐ Other LAN/Internetworking

WAN EQUIPMENT & SERVICES

A B
☐ 40. ☐ Modems
☐ 41. ☐ Cable Modems
☐ 42. ☐ Asynchronous Transfer Mode (ATM)
☐ 43. ☐ Frame Relay Equipment Including FRADS
☐ 44. ☐ Frame Relay Services
☐ 45. ☐ Remote Access Products
☐ 46. ☐ Remote Access Services
☐ 47. ☐ Wireless Data Equipment/Services
☐ 48. ☐ ISDN Equipment/Services
☐ 49. ☐ FT-1/T-1/T-3 Services
☐ 50. ☐ xDSL Services/Products
☐ 51. ☐ Diagnostic/Test Equipment
☐ 52. ☐ DSU/CSU
☐ 53. ☐ PBXs
☐ 54. ☐ Videoconferencing
☐ 55. ☐ Managed LAN/Router Services
☐ 56. ☐ Fax Servers/Services
☐ 57. ☐ Other WAN Equipment/Services

None of the above (1 - 57) A ☐ 58. B ☐

9. Please indicate the Network hardware/software/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing B. Plan to purchase

COMPUTERS/PERIPHERALS

A B
☐ 01. ☐ Laptops/Notebooks/PDAs
☐ 02. ☐ PCs
☐ 03. ☐ Windows Terminals/Thin Clients
☐ 04. ☐ Workstations
☐ 05. ☐ Storage/Backup (Optical,Disk,Tape,RAID)
☐ 06. ☐ Printers
☐ 07. ☐ Printer/Fax/Copier Hybrids (Multifunction Printers)
☐ 08. ☐ Minis
☐ 09. ☐ Mainframes
☐ 10. ☐ Fax/Modem Boards
☐ 11. ☐ Memory/Chips/Boards/Cards
☐ 12. ☐ Other Computers/Peripherals

SOFTWARE/APPLICATIONS

A B
☐ 13. ☐ Network Management
☐ 14. ☐ Systems Management
☐ 15. ☐ Security
☐ 16. ☐ Directory Services
☐ 17. ☐ Operating Systems
☐ 18. ☐ Applications Development Tools
☐ 19. ☐ Database Management/RDBMS
☐ 20. ☐ Groupware
☐ 21. ☐ E-Mail
☐ 22. ☐ Enterprise Resource Planning (ERP)
☐ 23. ☐ EDI
☐ 24. ☐ Desktop Videoconferencing
☐ 25. ☐ Imaging
☐ 26. ☐ Middleware/Serverware
☐ 27. ☐ Document Management
☐ 28. ☐ Site Metering Tools
☐ 29. ☐ Data Warehousing
☐ 30. ☐ Anti Virus Software
☐ 31. ☐ Multimedia
☐ 32. ☐ Y2K Conversion Software
☐ 33. ☐ Helpdesk
☐ 34. ☐ Other Software/Applications

SERVICES

A B
☐ 35. ☐ BPO (Business Process Outsourcing incl. Financial Services, HR, Logistics etc.)
☐ 36. ☐ Applications Outsourcing
☐ 37. ☐ Call Center Outsourcing
☐ 38. ☐ Systems Integration/Consulting
☐ 39. ☐ Education/Training Services
☐ 40. ☐ Other Services

None of the above (1 - 40) A ☐ 41. B ☐

10. Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A B
☐ 01. ☐ TCP/IP
☐ 02. ☐ IPv6
☐ 03. ☐ SNA
☐ 04. ☐ Novell IPX/SPX
☐ 05. ☐ APPC/APPN/LU 6.2
☐ 06. ☐ NETBIOS/NETBUEI
☐ 07. ☐ NFS
☐ 08. ☐ SNMP
☐ 09. ☐ Other Network Protocols

LAN/WAN ENVIRONMENT

A B
☐ 10. ☐ Gigabit Ethernet
☐ 11. ☐ Switched Ethernet
☐ 12. ☐ Fast Ethernet
☐ 13. ☐ Ethernet
☐ 14. ☐ ATM
☐ 15. ☐ Token Ring/Token Ring Switching
☐ 16. ☐ IP Switching
☐ 17. ☐ Layer 3,4 Switching
☐ 18. ☐ FDDI
☐ 19. ☐ 100Base-T
☐ 20. ☐ 10Base-T
☐ 21. ☐ Fibre Channel
☐ 22. ☐ Wireless
☐ 23. ☐ DSL
☐ 24. ☐ ISDN
☐ 25. ☐ Frame Relay
☐ 26. ☐ Private Line T1, T3, FT-1, SONET
☐ 27. ☐ Other LAN/WAN Environment

NETWORK OPERATING SYSTEM

A B
☐ 28. ☐ Windows NT/Windows 2000
☐ 29. ☐ Novell (NetWare 5.X)
☐ 30. ☐ Novell (NetWare 4.X)
☐ 31. ☐ Novell (NetWare 2.X,3.X)
☐ 32. ☐ LINUX
☐ 33. ☐ Microsoft (LAN Manager)
☐ 34. ☐ Banyan (Vines)
☐ 35. ☐ IBM (LAN Server)
☐ 36. ☐ Other Network Operating System

COMPUTER OPERATING SYSTEM

A B
☐ 37. ☐ NT Workstation
☐ 38. ☐ Windows 2000
☐ 39. ☐ Windows 98/95/3.1
☐ 40. ☐ Intel based UNIX
☐ 41. ☐ RISC based UNIX (incl. SOLARIS)
☐ 42. ☐ LINUX
☐ 43. ☐ DOS
☐ 44. ☐ OS/2,OS/2 WARP
☐ 45. ☐ OS/400
☐ 46. ☐ IBM MVS/VM/VSE/ESA
☐ 47. ☐ Digital VMS
☐ 48. ☐ Macintosh
☐ 49. ☐ Other Computer Operating System

None of the above (1- 49) A ☐ 50. B ☐

11. Which of the following hardware platforms are installed/planned in your company?
(check ALL that apply)

A - Mainframes (Large Scale)
1. ☐ IBM
2. ☐ Other

B - Minis (Midrange)
1. ☐ IBM RS/6000
2. ☐ IBM AS/400
3. ☐ Digital/Tandem/Compaq
4. ☐ Unisys
5. ☐ H-P
6. ☐ Other

C - Workstations
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Digital/Compaq
4. ☐ IBM
5. ☐ Silicon Graphics
6. ☐ Other

12. What is the estimated gross revenue of your entire company/institution?
(check ONE only)

1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or less
10. ☐ None of the above

13. For which areas outside of the US do you have purchase influence?
(check ALL that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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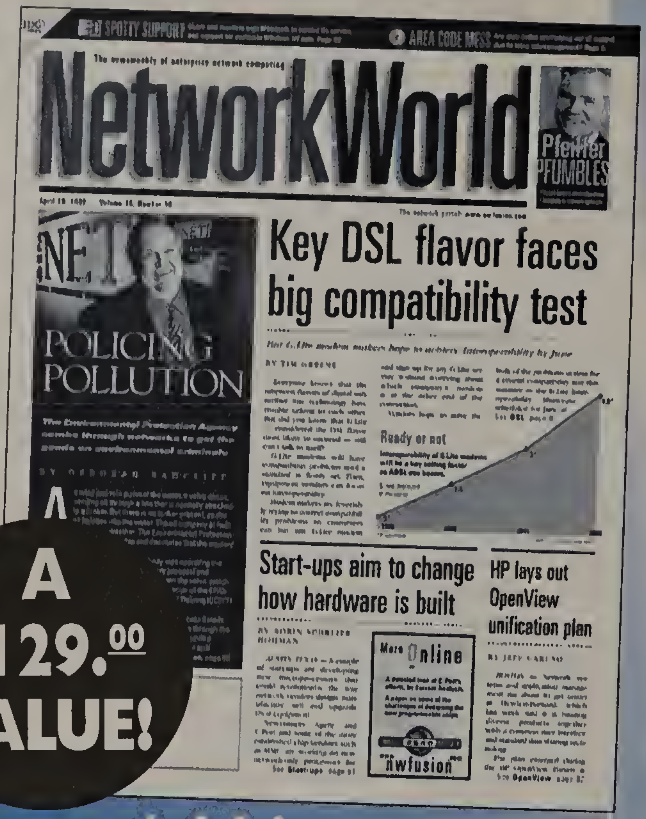

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POLICING POLLUTION

Key DSL flavor faces big compatibility test

Start-ups aim to change how hardware is built

HP lays out OpenView unification plan

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Infrastructure

TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage

Briefs

Cisco has announced a definitive agreement to acquire privately held **Cocom A/S** of Copenhagen, Denmark, a developer of cable, satellite and wireless Internet access equipment. The acquisition adds Digital Video Broadcasting (DVB) systems to Cisco's cable portfolio. DVB is a standard used in digital set-top boxes and broadband Internet access appliances. Under terms of the agreement, $65.6 million in Cisco common stock will be exchanged for all outstanding shares and warrants of Cocom. The acquisition is expected to close in the first quarter of Cisco's fiscal year 2000.

Terabit router start-up **Avici Systems** has completed third-round funding of more than $40 million. The investment will enable Avici to expand deployment of its Terabit Switch Router and increase its sales and support infrastructure. Contributors to this round of funding included Sprout Group, the venture capital affiliate of Donaldson, Lufkin & Jenrette; J.P.Morgan; and Meritech.

Hewlett-Packard last week unveiled entry-level Unix servers for electronic commerce, enterprise resource planning and supply chain applications. The HP 9000 L-Class servers are the low end of the HP 9000 server line. The L1000 has up to two processors; the L2000 has one to four processors. The servers ship with HP-UX 11; HP's e-commerce-based E-speak; a Web console for systems management; and WebQoS, HP's peak usage and quality-of-service management application. Also included are a Web server and BEA's WebLogic application server. Pricing for the L1000 starts at $16,000; the L2000 starts at $21,700.

HP: www.hp.com

Microsoft rethinks clustering strategy

BY JOHN FONTANA

Microsoft has reversed field on its Windows 2000 clustering strategy and will now tear out part of the technology and fold it into a separate server.

Microsoft says the intent of the newly unveiled AppCenter Server is to create a mechanism to manage and monitor large Web server farms running applications built using its Component Object Model (COM+) technology. For IT executives, the new server is also intended to ensure fault tolerance for key Web applications, most notably electronic commerce.

AppCenter features a set of management, monitoring and replication tools, as well as the Component Load Balancing (CLB) service that was originally part of Windows 2000.

Some questioned whether Microsoft lifted CLB because it was causing problems that could delay the release of Windows 2000, which also includes Network Load Balancing and Cluster Service. The Cluster Service in particular provides a failover capability for CLB. But observers say creating a separate product makes sense.

"CLB is basically a routing service, and now with AppCenter, you have the tools to manage server farms from one console," says Scott Stanfield, CEO of Vertigo Software, which has been putting CLB through its paces. "The real benefit may be the reduction in manpower needed to manage each individual machine in a server farm."

The CLB service functions as a "router" that balances COM+ objects across servers in a server farm. Using a response-time tracking mechanism, CLB ensures that requests for COM+ objects are filled as quickly as possible, thus ensuring performance of applications.

Microsoft officials say CLB alone was not enough, and an extra set of tools was needed to complement the service. Originally, Microsoft was set to include a basic management tool for CLB within Windows 2000.

With AppCenter, Microsoft has added management features to assist CLB, including a single console to manage distributed applications; replication services for components and files; and self-healing mechanisms for hardware and software.

AppCenter is expected to ship in the middle of next year. Pricing and licensing have not been announced. ◪

Handling the load

Microsoft last week unveiled AppCenter Server, which can manage Web server farms as if they were a single entity. AppCenter is key for the reliability of large-scale Web applications, such as those for electronic commerce.

Features	Description
Single Application Image	Distributed Web applications managed from single console.
Application Replication	Files, components copied across servers.
Performance/health monitoring	Single view of performance, event, log data.
Fault tolerance	Self-healing/monitoring of hardware, network, applications.
Dynamic load balancing	Balances COM+ component execution across servers.

Data General debuts storage device

BY DENI CONNOR

SOUTHBORO, MASS. — Data General has added an entry-level storage device that promises to offer enterprise networks Fibre Channel storage connectivity to distributed applications, such as mission-critical databases, mail-messaging or file and print.

Introduced last week, the FC5300 Fibre Channel Storage Array is the smallest disk subsystem in Data General's 5000 family. It is ideal for businesses that need storage capacity for applications requiring high availability. The device can be upgraded to larger models in the FC5000 family without system interruption.

Data General's Storage Array is aimed applications that need high availability.

HotJobs.com, an online classified jobs ad agency, is using the FC5300 array for its burgeoning storage needs. "We chose the FC5300 to provide better reliability and response times for our internal back-office systems," says George Nassef, HotJobs.com's chief information officer. HotJobs.com has more than 2,000 customers and hosts over 500,000 résumés online. Nassef uses a Fibre Channel switch to connect multiple Windows NT servers to the disk array.

The FC5300 has redundant disk drives, power supplies, fans and storage processors to provide continuous data access in the event of a component failure. Each storage processor features a built-in Fibre Channel Arbitrated Loop port for connecting to up to two host computers or daisy-chaining to other Fibre Channel hubs.

IT professionals can manage the FC5300 via Data General's Navisphere software from a single NT console or DG/UX command-line interface. The storage array operates in Solaris, IBM AIX, NT and NetWare environments at distances of up to 30 kilometers with fiber-optic extenders, which connect the device to the WAN connection.

The Clariion FC5300 Fibre Channel disk array is available immediately at a starting price of $20,000. A high-end system with 30 drives sells for about $200,000.

Data General: www.dg.com

More Online

- **See what Bill Gates has to say about Windows 2000 components.**
- **Get ready for Windows 2000 with our migration guide.**

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Wired Windows . Dave Kearns

HOW TO FEEL SECURE ABOUT Y2K ISSUES

So there I was, in the concourse at the Georgia World Congress Center outside the Interop exhibit space, just trying to rest my feet and grab a quick smoke when I hear someone roar out: "Dave — is that you?" I look up and there's a familiar face, but something doesn't look right. Soon enough, though, I learn its my old friend Umesh Verma, from Blue Lance software — only he's lost about 50 pounds since I last saw him. "Have you been ill?" I asked. "No, Dave, it's worry over this new Y2K problem that's done this to me," he replied.

Just before my eyes completely glazed over, Umesh drew me back in by insisting that it's not the second between Dec. 31 and Jan. 1 that's the problem. Rather, it's the crooks, thieves and malicious crackers who'll plunder and destroy your assets around the turn of the year and then blame it all on the Y2K bug!

He reminded me that most financial losses due to network security problems are caused by internal intruders — and that right now this includes some fly-by-night Y2K "consultants."

Fortunately, Umesh also had an answer for this problem: good auditing tools. And, of course, he thinks his auditing tool, LT Auditor, is the best. Well, I've used and recommended LT Auditor for NetWare for more than 10 years, so I didn't need convincing. He also recommends some good business practices that don't require you to spend money on a product:

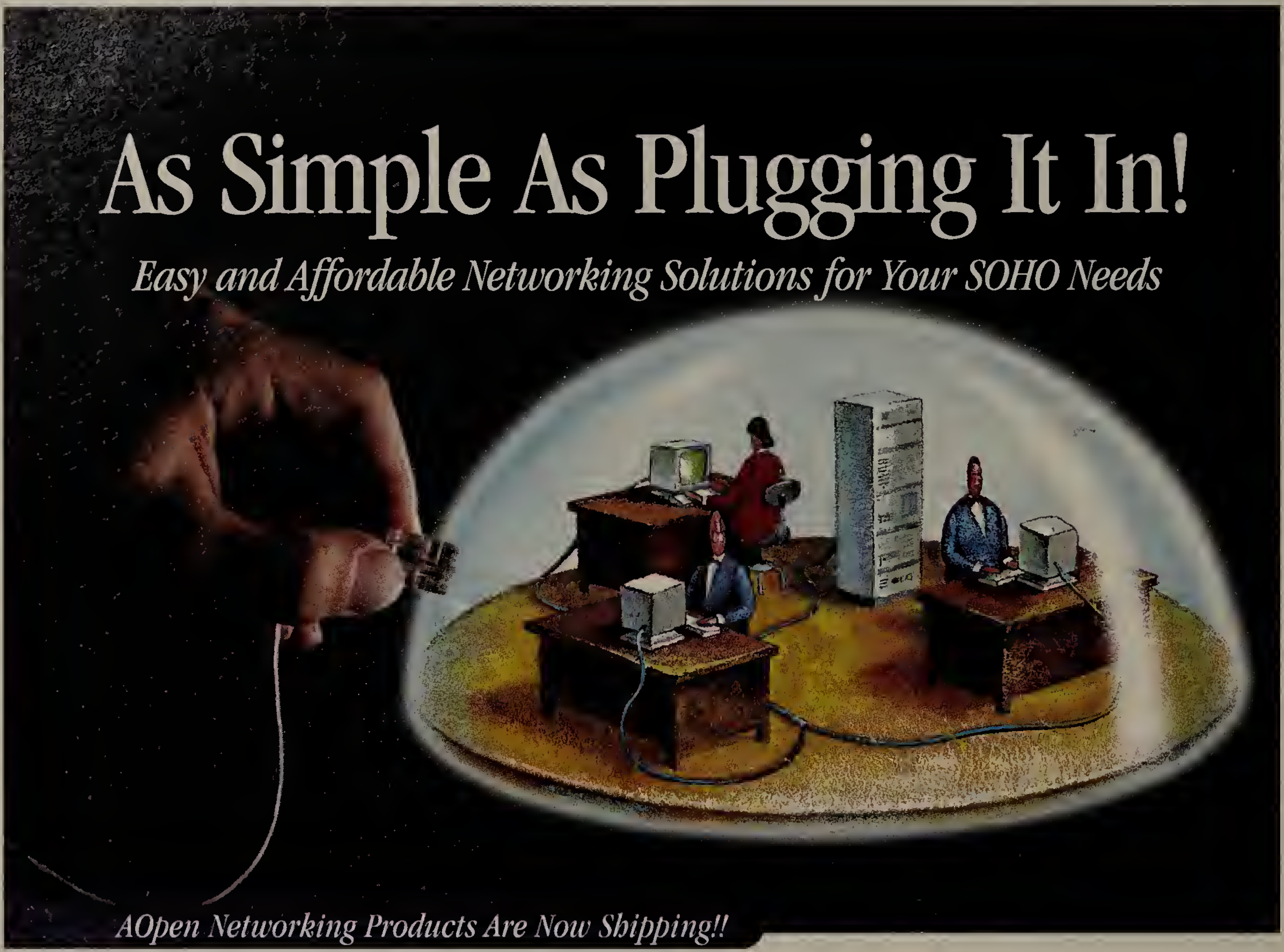
- Check credentials on all programmers — contract or otherwise — working on your network.
- Have programmers sign a letter of agreement outlining liabilities for breaches.
- Keep detailed records of who did what, when and where.
- Implement effective intrusion detection.
- After "repairs" by contractors, test for trap doors, unfamiliar code or software installed that's not specifically part of the repair.
- If there are trap doors, get signed agreements on their uses.
- Review security reports daily.
- Establish multiple levels of security checks and balances.

You can get more sound advice, a Y2K risk assessment guide and an evaluation copy of LT Auditor at www.bluelance.com.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of The Week

While some prognosticators are predicting that Windows 2000 will go Release To Manufacturing (RTM) during Comdex (Nov. 15-19), most knowledgeable insiders are still predicting a late December RTM with products not appearing on dealers' shelves until late January. So all those worries about upgrading to Windows 2000 before Jan. 2000 are now moot. Don't you feel better already?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ALW-6005: 5-port SOHO Dual-Speed Switch

- Provides 5 port RJ-45 connections of 10/100Mbps
- Support 10/100Mbps Auto-Negotiation with Half/Full Duples
- Desktop model for simple set-up plug & play operation
- One crossover up-link port for network expansion

ALW-6008: 8-port SOHO Dual-Speed Switch

- Same features in ALW-6005. provide 8 port RJ-45 connections

ALH-608ds: AOpen 8-port SOHO Dual-Speed Hub

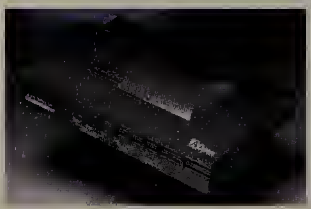
- Provide 8-port RJ-45 Connections for 10/100Mbps
- Automatic switching between 10/100Mbps
- Bridge up-link port in slave hub. stackable upto 5 sets
- Dual-Speed ports for easy and fast ethernet integration

ALW-616ds: 16-port SOHO Dual-Speed Hub

- Same features in ALW-6005. provide 8 port RJ-45 connections

iRoute128: ISDN Router with 4 Port Hub

- Integrated TA. NT1. Hub and Router Function
- PPP, ML-PPP protocol for WAN connection
- Bandwidth on demand(BOD) for emergent voice call
- 20xRJ45 modular jack. 1xRJ11 modular jack. 4x10 BaseT hub port



AIR-101: AOpen IP SOHO Sharing HUB

- Allow Multiple users to share one IP address.
- Connects either one or two external modems
- Provides a web-based user interface for one-step installation
- Features one 10/100Mbps auto-sensing Ethernet port
- Supports filter for Internet Access Control

AIR-201: AOpen IP SOHO Sharing Router

- Include all features on AIR-101 plus:
- 28.8/33.6/56Kbps Modem built-in
- Support ISDN & Leased-Line connections
- Support both fixed and Dynamic Assignment of public IP address
- Support remote dial-in function

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Carriers & ISPs

The Internet, Extranets, Interexchange and Local Carriers, Wireless, Regulatory Affairs

Briefs

Nextlink, the largest holder of local multipoint distribution services (LMDS) licenses, says it's on track to roll out fixed wireless services in Dallas by year-end.

Nextlink announced last week that it is conducting a customer LMDS trial in Los Angeles using equipment from multiple vendors. The service provider is testing point-to-multipoint and point-to-point equipment from Ericsson, Spectra-Point Wireless, Wavetrace and Digital Microwave.

This is the first time Nextlink is taking LMDS out of the lab and deploying it for a customer trial.

Nextlink: www.nextlink.com

Launching itself into the application service provider market, international carrier **Equant** has introduced a managed Microsoft Exchange service. Equant will maintain dedicated servers for each customer and provide global support around the clock.

Equant will charge according to a sliding per-seat scale, with the fee hitting around $20 per end user, per month at 1,000 users.

Equant: www.equant.com

The **Federal Communications Commission** has given four states with ongoing area code disputes — California, Florida, Massachusetts and New York — temporary authority to force carriers to share blocks of numbers.

The move is a Band-Aid until the FCC issues a national standard, expected early next year, for a more efficient system of handing out numbers via telco switch upgrades. California regulators praised the FCC move and canceled a planned new area code in Los Angeles, which has already suffered numerous area code additions as new carriers fight for numbers.

Rhythms DSL is frame relay friendly

Service will push traditional frame relay over DSL circuits.

BY TIM GREENE

DENVER — Digital subscriber line may translate into lower frame relay prices, according to a new service from Rhythms NetConnections.

Rhythms sells wholesale and retail DSL but has expanded its services to include Rhythms Enterprise Network frame relay service delivered over DSL lines at speeds ranging from 128K bit/sec to 1.5M bit/sec.

Rhythms is following a trend among service providers to support frame relay over DSL, which is more commonly thought of as an IP access technology. For example, US West and Intermedia Communications have announced DSL over frame relay services.

Traditional frame relay service would require a four-wire connection to carry those speeds, but DSL runs over two wires. Rhythms uses two flavors of DSL to support the service, ISDN-based DSL and symmetric DSL.

Prices range from $200 per month for a 128K bit/sec service to $700 per month for a 1.5M bit/sec service, Rhythms says. The 128K bit/sec service includes one virtual circuit and a guarantee that 16K bit/sec will always be available. Conventional frame relay prices are based on separate fees for connecting to the carrier's switch, the local loop, virtual circuits and minimum bandwidth.

A typical 128K bit/sec frame relay service costs $500 per month just for the port on the carrier switch, more than double what Rhythms charges for its packaged service, according to Steve Taylor, principal at Distributed Networking Associates in Greensboro, N.C. "I think it's a really good deal," Taylor says.

But customers will have to carefully weigh whether it is worthwhile to switch over from their existing frame relay providers to Rhythms, says Carroll Perkins, senior systems specialist for Siemens' Westinghouse Power in Orlando. Customers at the end of a frame relay service contract might find the switch worthwhile, he says.

But they would have to weigh the internal cost of switching carriers against the potential monthly savings. "If you save $1,200 a month, you can't have an engineer work on the project for very long and still get the cost back in a year," Perkins says.

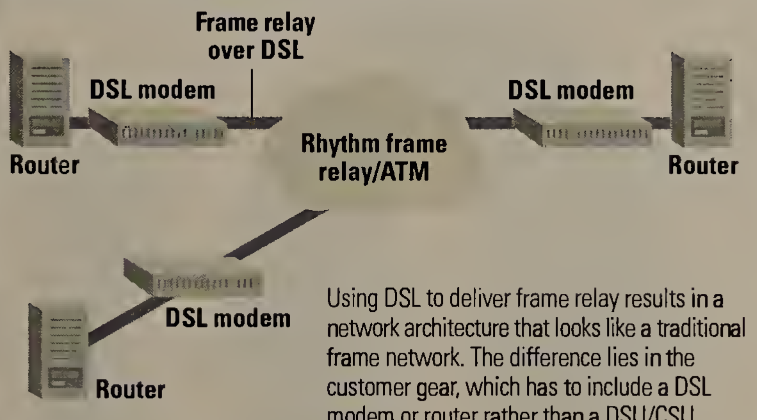
The service will be available wholesale to other carriers that might want to market it, Rhythms says. Intermedia and MCI WorldCom wholesale DSL service from Rhythms, but neither has announced plans to use this new service.

The Rhythms service is available in the 24 cities the company serves. As part of the service, Rhythms installs a Copper Mountain DSL modem or router that it manages for the customer.

Rhythms: www.rhythms.com

It looks like frame relay

Rhythms Netconnections is offering frame relay service over DSL circuits for less than traditional frame costs.



Using DSL to deliver frame relay results in a network architecture that looks like a traditional frame network. The difference lies in the customer gear, which has to include a DSL modem or router rather than a DSU/CSU.

AT&T takes down non-Y2K-compliant net

BY DAVID ROHDE

BASKING RIDGE, N.J. — AT&T is quietly taking an old circuit-switched network out of commission because its Y2K fix for the net won't be ready in time.

The carrier is closing the network originally operated by ACC Holdings, a long-distance carrier AT&T obtained through a series of acquisitions. ACC primarily served residential and small business customers, and AT&T concedes that it never fully integrated the ACC switches and back-office systems into its own. ACC was purchased by alternative local carrier Teleport before Teleport was bought by AT&T last year.

In a filing at the Federal Communications Commission, AT&T revealed that it has to migrate ACC's 1,350 small business customers and 6,000 residential customers to the main AT&T telephone network by Dec. 31 because "certain legacy systems" are not Y2K-compliant.

The noncompliant pieces of the network are not switches but rather "all the operating systems around the billing platform," says Barbara Mottola, an AT&T program manager in charge of the migration, who says upgrading the systems would be too costly.

Although AT&T owns ACC, the smaller network still maintained its own primary interexchange carrier (PIC) code rather than AT&T's. AT&T's lawyers feared that if the company simply moved ACC customers to the main AT&T network without gaining individual permission from each of them, AT&T would technically violate the FCC's new antislamming rules meant to prevent unauthorized PIC code changes by unscrupulous carriers.

So AT&T filed for an antislamming rule waiver to make the migration faster, and the FCC granted the waiver last month. AT&T is notifying the affected customers of the change anyway.

Analysts say the fact that AT&T revealed it was taking down a noncompliant system, coupled with the fact that it also says it has no similar situations, is to the company's credit. ◪

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- Our weekly DSL news update.

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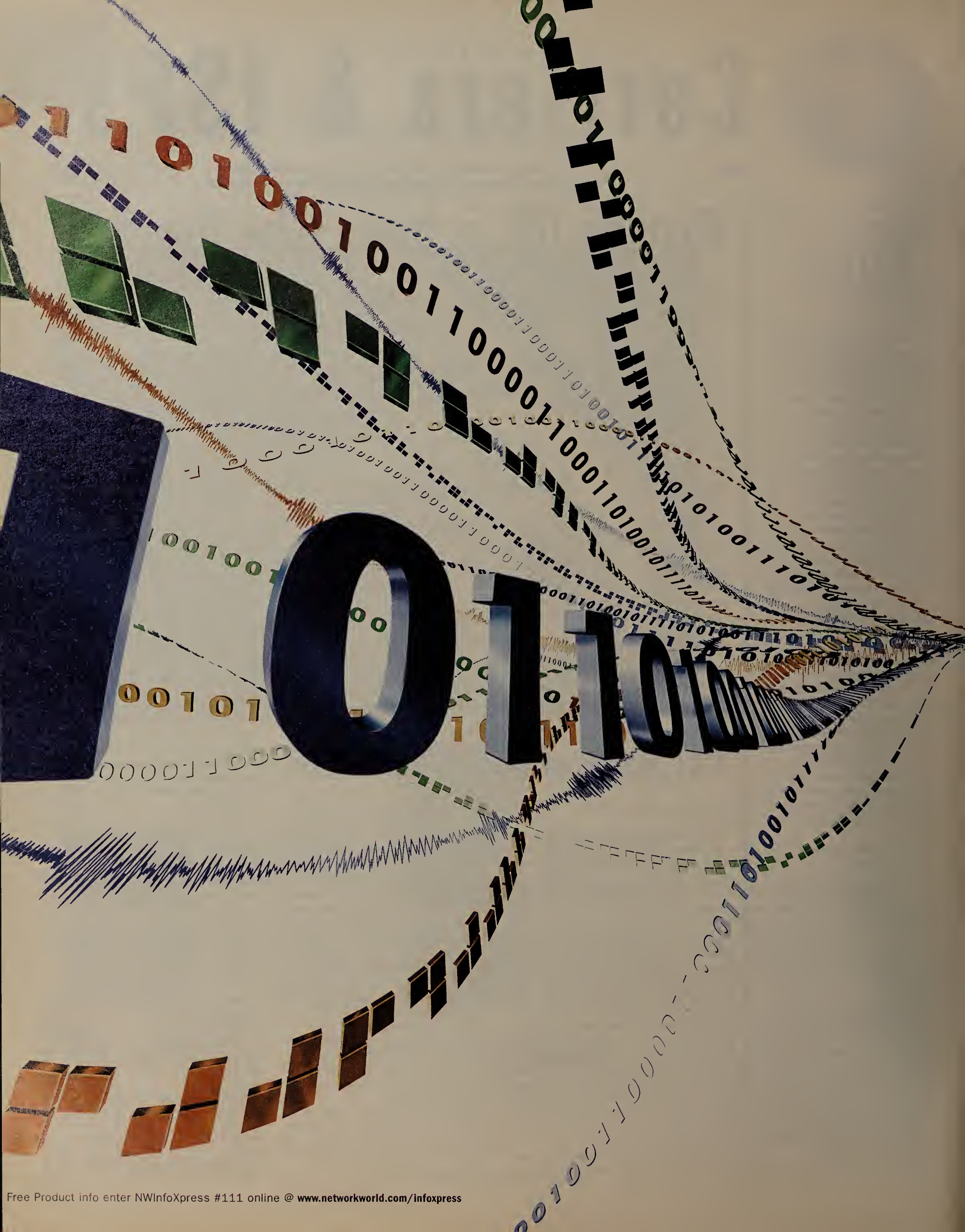

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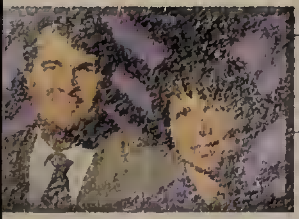

Wan Monitor . Daniel Briere and Christine Heckart

NEW LAN TEST BED — YOUR OWN HOME?

You've been thinking that some of the new wireless LAN systems might be a good fit for your network because adding clients would become less labor-intensive.

Well, think some more. Why not first test such a system in your spare bedroom instead of the company boardroom? Many exciting products are being released for the home network marketplace rather than the enterprise marketplace — products that are fairly robust for most implementations. In addition, the price reductions required to make these systems attractive to consumers make them an easier fit into your IS budget.

You probably don't think about home networking too often, but here's why you should:

You get a chance to conduct low-risk, low-cost trials of new systems such as 802.11 Wireless Ethernet. Only a year ago this was a very expensive proposition, but with the top blowing off the home LAN marketplace, PC cards and access points have become reasonably priced and widely available.

Instead of messing with your office network, why not try the technology with a few technically-savvy, laptop-equipped telecommuters? Connect their broadband digital subscriber line (DSL) or cable modem pipes to a wireless system and see if they can be more productive working anywhere in the house.

Sooner rather than later, your telecommuters will need support for networking outside their home cubicles. The traditional model of a single computer connected to an analog modem in the home office is fading fast. More and more homes, especially those with at-home workers, are getting broadband pipes to connect several computers and TVs.

Of course you don't want to support their kids' iMacs, but people with broadband access won't want to get a second connection for their personal use; they'll want to share the business-paid DSL or cable modem connection. Accepting this and understanding how people will connect multiple computers in the home environment is a good preventative measure to prepare yourself for supporting them. (For most people, it will be phoneline networking or wireless, not traditional Ethernet.)

Security becomes an even greater issue in a home network environment. Take all the security worries you already have — break-ins to your LAN and servers, laptop theft — and add a worker's PC full of confidential files sitting on an unprotected network with an always-on Internet connection, and you've got a recipe for a migraine.

Fortunately, learning the ins and outs of home networking isn't too difficult for anyone currently administering an office LAN. Remember, these systems are supposed to be easy enough so that people who think WAN is Elmer Fudd's past tense of "run" can get them up and going in a few minutes. A good primer to get you up to speed is our *Smart Homes for Dummies*. It tells all you need and more, and maybe even gives you some ideas to daydream about during your coffee breaks.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Briefs

Lotus will resell an e-mail gateway from **TenFour** in Chantilly, Va., as part of its Super.move e-mail migration program.

TenFour's TFS Gateway lets organizations maintain access to e-mail records from legacy systems following migration to Lotus' Notes and Domino groupware. The gateway supports Notes, Lotus' cc:Mail, Microsoft's Exchange and Mail, Novell GroupWise, MCI Mail and other e-mail packages. The TFS Gateway synchronizes the directories of various e-mail packages and maintains e-mail address books without slowing performance. Lotus has been reselling the TFS Gateway in Europe since April, but will now offer it on a worldwide basis.

Lotus: www.lotus.com;
TenFour: www.tenfour.com

Integrated Business Systems & Services (IBSS) has begun shipping Synapse Manufacturing 2.0. This NT- or Unix-based order fulfillment software works by combining data from back-end enterprise resource planning systems from Oracle, SAP and JD Edwards with data from ship-floor control systems from vendors including Wonderware and Intellution. Pricing for Synapse Manufacturing 2.0 starts at $100,000.

www.ibss.com

IntraNet Solutions in Eden Prairie, Minn., a maker of Web-based document and content management products, has agreed to buy **InfoAccess**, a Bellevue, Wash., vendor of HTML and XML content publishing wares. IntraNet's key product is Intra.doc, and InfoAccess makes the Transit Central product suite. The transaction is worth about $15 million. The combined firms will have more than 110 employees, with products spanning the desktop, workgroup and enterprise.

Key Java messaging tools emerging

BY JOHN COX

A new breed of communications software is emerging that will be critical to Java's success in enterprise nets. These products, such as Progress Software's new SonicMQ, let Java applications reliably share information with each other and with existing applications on corporate networks.

Such program-to-program messaging products will become increasingly important as corporate IT groups build electronic commerce systems, which typically consist of a loose federation of applications that communicate over the Internet.

"Traditionally, we'd create point-to-point connections between specific applications using Java's Remote Method Invocation [RMI] or with [the Common Object Request Broker Architecture]," says Peter Chang, chief technology officer at Pipeline Software, a San Jose consulting company. "But point-to-point connections on the Web are not reliable. So we needed a different communications infrastructure to do that."

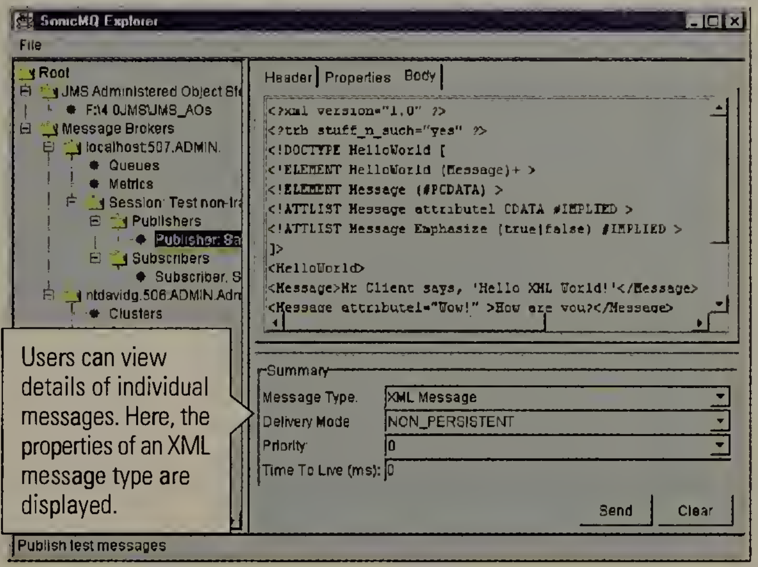
That's where the Java Messaging Service (JMS) comes in. JMS describes how to create reliable message queues, which are like bulletproof safes for storing packages that contain transaction or other information, and the procedures used by the queues to exchange these packages. If a "safe" at another application can't be accessed because it's too full with other messages or because the network isn't available, the message remains in protective storage until a new connection is made.

Vendors use JMS like a cookbook, to create programs used for building the queues and connections.

Sun announced its JMS offering, Java Message Queue, in June. A host of middleware vendors, such as BEA Systems and IBM, also plan to add JMS offerings to their product lines.

Java management made easy

SonicMQ gives users an Internet Explorer-like interface from which to manage Java Messaging Service functions.



```
<?xml version="1.0" ?>
<?trb stuff_n_such="yes" ?>
<!DOCTYPE HelloWorld [
<!ELEMENT HelloWorld (Message)+ >
<!ELEMENT Message (#PCDATA) >
<!ATTLIST Message attribute1 CDATA #IMPLIED >
<!ATTLIST Message Emphasize (true|false) #IMPLIED >
]>
<HelloWorld>
<Message>Mr Client says, 'Hello XML World!'</Message>
<Message attribute1="Wow!" >How are you?</Message>
```

Message Type: XML Message
Delivery Mode: NON_PERSISTENT
Priority: 0
Time To Live (ms): 0

Users can view details of individual messages. Here, the properties of an XML message type are displayed.

But Progress, which will begin beta-testing SonicMQ in early October, may be the first established software vendor other than Sun to deliver a JMS-based product. According to Progress, delivering such a product has involved a huge engineering effort.

"It's very unlike RMI or other Java APIs," says George Kassabgi, a Progress vice president. "With those APIs, the application developer can figure out what to do and create an implementation pretty much on his own. This is absolutely not the case with JMS."

SonicMQ, written entirely in Java, lets users cluster key processes, such as message brokering, for maximum performance. It also includes a message type that can work with data packaged in XML, which is fast becoming a standard format for exchanging data. SonicMQ

See **JMS**, page 30

Sun-Netscape Alliance focuses on user management

BY JOHN FONTANA

The Sun-Netscape Alliance last week unveiled an integrated bundle of applications that could make it easier for companies to set up directory-based systems for managing end users across internal networks and extranets.

The alliance pulled the curtain back on its Unified User Management Suite, a collection of existing products, including the iPlanet Directory Server, Certificate Management System, Meta-Directory and Delegated Administrator. The alliance is bundling in a third-party product, Netegrity's SiteMinder, for policy management, authentication and authorization services.

"They've taken the crucial parts of user management — the directory, public-key infrastructure, authentication and access control — and put them together ... in an effort to ensure they work together," says Jamie Lewis, president of The Burton Group.

The directory creates a central repository of information that can be used to add and delete users or to approve user access to Web-based applications. The Meta-Directory allows Directory Server to collect and share data stored in disparate directories, such as those in enterprise resource planning or e-mail applications.

The certificate system supports a PKI, while SiteMinder provides single sign-on, centralized access control and policy management capabilities.

The Delegated Administrator allows for end-user self-service, which means end users can add, delete and update information without the need for a directory administrator. Companies such as Oblix also are building directory-enabled user management applications similar to the Delegated Administrator.

The Unified User Management Suite is expected to ship next month and will cost $15 per user.

More Online

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- **Get more technical details from Sun and Netscape.**
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NetOps roots out network problems

BY JEFF CARUSO

Many network management tools will point out a poorly performing or unresponsive network device, but few can say why the device is having trouble.

To address this issue, NetOps next month will release software to get to the bottom of network device problems. Called Visionary, the software collects enough data from devices to build a picture of what is happening within them.

Although Visionary focuses on individual elements, such as routers and switches, the software goes beyond traditional element management, says Patrick Dryden, an analyst at Giga Information Group. "You could look at minor changes to a device to detect when a major problem may be imminent," he says.

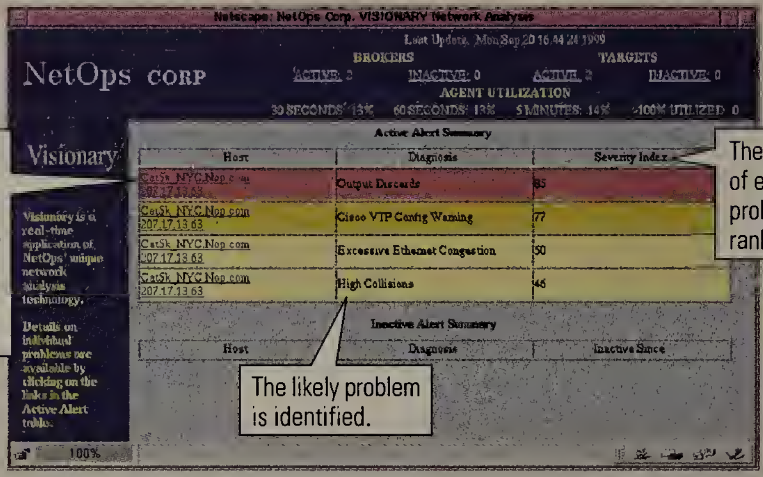
Other vendors are starting to build similar intelligence into their management software. Computer Associates, for example, is currently testing Neugents for networks, Dryden says. These software agents learn by analyzing patterns of data. If a device failed after certain symptoms appeared, a Neugent reasons that the device might fail again if the symptoms reappear. Dryden says Visionary is similar but it already knows the symptoms to look for, making the product more useful from the start.

Visionary uses software probes — running on Linux, Solaris or Windows NT machines — that monitor individual devices and relay data back to a server running on one of the same platforms. Pricing for the software starts at $25,000.

NetOps: www.netops.com

Net vision

NetOps' Visionary software highlights critical network problems.



Last Update, Mon Sep 20 16:44:24 1999

BROKERS ACTIVE: 2 INACTIVE: 0

TARGETS ACTIVE: 2 INACTIVE: 0

AGENT UTILIZATION

30 SECONDS: 13% 60 SECONDS: 13% 5 MINUTES: 14% >100% UTILIZED: 0

Active Alert Summary

Host	Diagnosis	Severity Index
CatSk_NYC.Nop.com 207.17.13.63	Output Discards	85
CatSk_NYC.Nop.com 207.17.13.63	Cisco VTP Config Warning	77
CatSk_NYC.Nop.com 207.17.13.63	Excessive Ethernet Congestion	50
CatSk_NYC.Nop.com 207.17.13.63	High Collisions	46

Inactive Alert Summary

Host	Diagnosis	Inactive Since

Visionary is a real-time application of NetOps' unique network analysis technology.

Details on individual problems are available by clicking on the links in the Active Alert table.

More detailed analysis is available by clicking on the host name.

The severity of each problem is ranked.

The likely problem is identified.

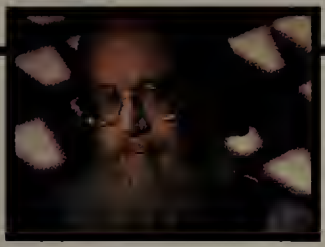
JMS,
continued from page 27

also includes a graphical administration program, which is accessible from any Java Web browser. A developer edition, for building test applications, will be available free on the Web. An enterprise edition will run on Windows NT and various Unix servers. Eventually, Progress will package SonicMQ with its Apptivity Java applications server.

Pipeline's Chang has found few JMS products on the market and is evaluating Progress' software for use in a Web-based business-to-business application. He needs a Java-based messaging product that is scalable, reliable and able to use the Web's HTTP protocol to tunnel securely through corporate firewalls.

So far, Chang likes what he sees in SonicMQ. But he's being cautious about JMS given that the technology is immature and that different vendors could end up implementing it in different ways. If vendors' different JMS products can't work with one another and messages sent from one server can't be read by another, application users could suffer, Chang says. ◪

[illegible] Electric Lightwave [illegible] Some services not available in some areas. 975-4



'Net Insider . Scott Bradner

PRIVACY- AND SECURITY-ENHANCING TECHNOLOGY

The Clinton administration's newly revised policies on the export of encryption technologies look amazingly good. But there are more than a few details to be revealed that may still change the picture.

For years, the Clinton administration seemed to be operating in a fantasyland — a land where the only smart people lived in the U.S., and no one outside the U.S. knew enough to develop good encryption technologies.

This was a fantasyland where the bad guys would be too stupid to use readily available, secure encryption software and instead would use administration-approved software that saved a copy of the encryption key for the government's use. For some reason, the administration has suddenly decided to move out of fantasyland.

At a Sept. 17 press conference during which encryption was described as "a privacy- and security-enhancing technology," the Clinton administration announced that it was removing almost all U.S. export controls on encryption technologies. You still won't be able to sell encryption technology to anyone in a country that the U.S. has labeled as a supporter of terrorism. Nor will you be able to sell custom encryption software or hardware to foreign governments or military establishments without specific approval.

You will be able to sell retail products to foreign governments and military establishments, as well as sell custom encryption products to anyone other than those restricted above. But you will need a "meaningful technical review" (in the words of the Department of Defense representative) before you can sell any encryption products overseas, and you'll need to provide the U.S. government with a list of your customers.

Finally the administration was able to understand that good encryption is a necessity for good security. As the Defense Department representative said: "We [the Defense Department] strongly need the sorts of protections that come with strong encryption."

This new policy is one part of a three-part proposal. The other parts are additional funding for an FBI-based Technical Support Center to help law enforcement agencies "respond to increasing use of encryption by criminals" and new laws that will protect any encryption-related techniques that law enforcement uses from discovery if a case comes to trial.

But it is too early to fully rejoice. The details about what the technical review will consist of, how long it will take and what the government wants to do with your customer lists have yet to be announced. These details are due by Dec. 15.

I don't know what caused reality to seep into the administration's thought process. But whatever the reason, it looks like we may just be getting a Christmas present that will help make the Internet and our privacy a lot safer in the next century.

Disclaimer: For Harvard, centuries come and go with many exigencies of the moment along the way, and the above is my view of this one.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Ask Dr. Intranet

By Steve Blass

We're looking for a good, inexpensive application for performing user audits on our intranet Windows NT servers. Can you recommend any free software for providing basic user information? Also, why haven't our Windows 98 PCs been able to connect to our intranet Samba servers since we upgraded them from Windows 95?

Via the Internet

The makers of the NT administration application Hyena provide a free command-line utility called Exporter. The utility exports data about users, groups, group members, disk space, shares, services, computers and printers from an NT domain. The data can be imported into spreadsheets or a database and used to produce audit reports. You can find Exporter at www.adkinsresource.com/exporter.zip.

To answer your second question, Windows 98 uses encrypted passwords, while Windows 95 uses clear text passwords when talking to servers. The FAQ for the Samba open source software points to a document (at http://us3.samba.org/samba/ftp/docs/textdocs/Win95.txt), which explains that you can rebuild Samba to use encrypted passwords or change the Windows 98 registries so the PCs use clear text passwords when authenticating to servers. Samba should be configured to use encrypted passwords and then be compiled and linked with the Data Encryption Standard library "libdes" to support encrypted Windows passwords.

Blass is a network architect at Sprint Paranet in Houston. You can reach him at drintranet@paranet.com.

Protecting the 'private' in VPN

BY ALAN MACLEOD

While the IP Security (IPSec) standard delivers strong authentication and encryption capabilities, it falls short in the features necessary to deploy and manage large-scale remote dial-up communities in a virtual private network.

Device-level authentication is a standard part of the IPSec Internet Key Exchange (IKE) negotiation, but IP address assignment and user-level authentication procedures are not. As a result, Internet Engineering Task Force efforts called IKE Configuration Method, Extended Authentication and Hybrid Authentication are underway to simplify and standardize key dial-up VPN services.

Remote users need a valid, internally recognized IP address to access the corporate network. Today they receive IP configuration information when they dial in to their corporate networks. This same requirement exists for remote access IP VPNs. To alleviate the need to manually assign IP addresses to each user, the IPSec working group has proposed the IKE Configuration Method. Known as Mode Config, it allows a dial-up user to receive IP configuration information as part of the IKE negotiation. Mode Config lets companies operate their IP VPNs in the same way they operate traditional remote access; it should be mandatory feature for any VPN.

The IPSec working group has focused primarily on digital certificates as the long-term solution for authentication at the device and user levels, but there are near-term issues.

First, distributing "trusted" certificates to a large body of remote users is complex. Second, a digital signature is generated from a key that resides on each PC. While the key is typically protected, the PC is often physically vulnerable to unauthorized access. Third, today's network operating systems (NOS) do not directly support certificates for user authentication.

For device-level authentication, preshared keys, which are somewhat analogous to passwords, offer a near-term alternative to certificates. They are easier to deploy, as they can be distributed once to each PC during the initial configuration process. However, they are less secure than certificates.

While the ultimate goal is to authenticate certificates directly to the NOS directory, two more near-term solutions have been proposed. The first is Extended Authentication within ISAKMP/Oakley (XAuth). The second is Hybrid Authentication Mode for IKE. Both proposals are defined as extensions to the IKE negotiation process and are based on the Mode Config draft described above.

XAuth allows user-level authentication against existing third-party authentication systems such as Remote Authentication Dial-In User Service, NetWare Bindery or Novell Directory Services. Because XAuth expects user input — username and password — it still requires certificates or preshared keys for first-phase device-level authentication.

In the most common XAuth scenario, a company's dial-up VPN users are assigned the same preshared key. This is not a problem for authenticating users; they still go through a username and password authentication. However, it is an issue for users authenticating their security gateways. It would not be difficult to spoof the gateway to obtain people's usernames and passwords. Certificates are necessary to address this problem.

As a result, Hybrid Authentication Mode for IKE has been proposed. Hybrid Authentication, a variation on the XAuth draft, combines the best of both worlds. Certificates are deployed only on the security gateways, not on all PCs. At the same time, the IKE negotiation is extended to allow authentication against existing third-party systems.

During the first phase of device-level authentication, the remote PC is optionally authenticated by the gateway via a digital signature/certificate. The gateway must return a digital signature/certificate to the client to confirm that it is the correct gateway. Second-phase user authentication is then based on username and password, allowing integration into existing authentication systems.

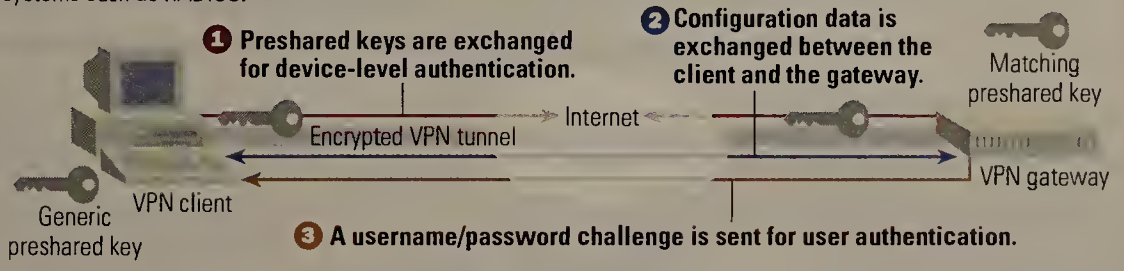
It's worth noting that because both proposals build on mechanisms used in IPSec, they can coexist within a full certificate infrastructure. The protocols have reasonably strong support within the VPN vendor community and provide a solution that will be required for many years to come, if not for the lifetime of IP VPNs.

MacLeod is director of systems engineering at Xedia. He can be reached at amacleod@xedia.com.

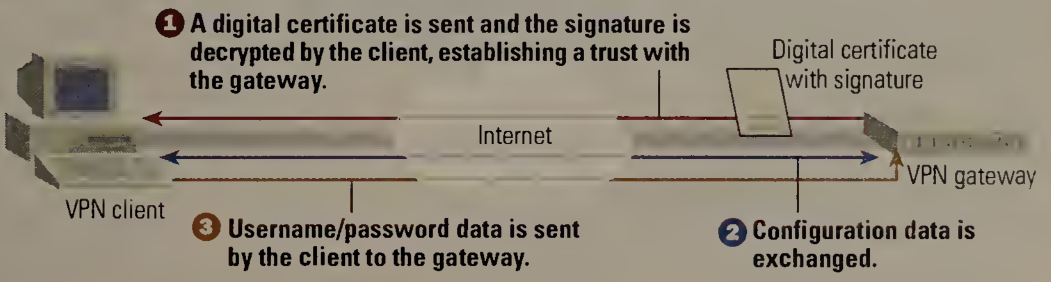
HOW IT WORKS

Extending authentication capabilities of VPNs

Extended Authentication (XAuth): Device-level authentication is supported via digital certificates or preshared keys, while user-level authentication is supported via username and password, allowing authentication against third-party systems such as RADIUS.


❶ Preshared keys are exchanged for device-level authentication.
❷ Configuration data is exchanged between the client and the gateway.
Matching preshared key
Internet
Encrypted VPN tunnel
VPN gateway
VPN client
Generic preshared key
❸ A username/password challenge is sent for user authentication.

Hybrid Authentication Mode: For increased security, a digital certificate with a digital signature is required for device-level authentication. Second-phase user authentication is then based on username and password.


❶ A digital certificate is sent and the signature is decrypted by the client, establishing a trust with the gateway.
Digital certificate with signature
Internet
VPN gateway
VPN client
❸ Username/password data is sent by the client to the gateway.
❷ Configuration data is exchanged.

Gearhead — inside the network machine . **Mark Gibbs**

VCARDS TAKE GUESSWORK OUT OF SHARING CONTACT INFO

Sharing information with a remote co-worker is complicated. There are a gazillion data types and something always seems to go wrong. Either your co-worker got a different version of the software you're using or you've sent a file with the wrong format or the wrong options set . . . there seems to be an endless list of snafus that can get in the way.

While Gearhead doesn't have a general solution for this sorry state of affairs (didn't mean to get your hopes up), there is a solution for a specific problem: Transferring contact data.

How often have you needed to send someone's details to a co-worker? Happens all the time, and because it isn't easy (we either have to type in the details or do a cut and paste from multiple fields), we usually send the minimum amount of information.

A much better way is to use products that use the vCard standard. V-Cards are structured blocks of text data that provide what is more or less an electronic business card. The data can include name, addresses, telephone numbers (home, business, fax, pager, cellular, ISDN, voice, data, video), e-mail addresses and related Internet URLs.

VCards can also include graphics and multimedia, including photographs, company logos, audio clips (think of the advantage of being able to hear how to pronounce the name on the vCard), along with geographic and time-zone information. VCards are also designed to support multiple languages and are transport and operating system independent.

The vCard standard has been around since 1996 (an Internet lifetime ago) and the current version, Version 3.0, is specified by the IETF in two parts: RFC 2425, MIME Content-Type for Directory Information, and RFC 2426, vCard MIME Directory Profile.

The caretaker of the vCard specification is the Internet Mail Consortium (www.imc.org), an industry organization whose members are primarily Internet mail software vendors in many parts of the market. The IMC's membership includes many of the big hitters, including America Online, Hewlett-Packard, IBM/Lotus, Microsoft, Nokia, Qualcomm and Sun.

So what actually is a vCard? As we said, it is a block of text data that starts with a vCard Delimiter . . .

BEGIN:VCARD

. . . and is terminated with either the logical end of the data stream or the appearance of the End vCard Delimiter as the first character on a line:

END:VCARD.

The properties of a vCard are defined as follows: PropertyName [';' PropertyParameters] ':' PropertyValue.

For example, names are identified by the property name N. The property value is a concatenation of the Family Name (first field), Given Name (second field), Additional Names (third field), Name Prefix (fourth field) and Name Suffix (fifth field) strings. The following is an example of the Name property for a person:

N:Mark;Gibbs;Rev.;Esq.

There are many types of properties defined, including formatted names ("FN") that show how the name is to be displayed, photograph ("PHOTO") that can be a URL or the actual image in any of several encodings, birth date ("BDAY") and so on.

You'll find the vCard standard carries some weight in the market and the list of products that use vCards is impressive (see www.imc.org/pdi/pdiprodslist.html).

Microsoft's Outlook is one of the most widely used products that supports vCard, and you can drag-and-drop vCards from e-mail messages to the contacts database and vice versa.

One of the nice consequences of the simplicity of the standard is that if you send a vCard to a user that doesn't have vCard support, he will simply see a block of structured text with all the information he needs.

Ensuring that your organization uses applications that support the vCard standard is an easy way to guarantee that information about contacts is easily and reliably transferred. Great. That just leaves a gazillion minus one types of data to deal with.

Transfer data to gh@gibbs.com.

NetworkWorld Fusion Spotlight

News, tips and tools from our Web site

Enough with progress!

Last week, we ran a story on the next 30 years of the Internet. Some readers said they don't want their alarm clocks connected to the 'Net, let alone their lives run by some computer network. "The thought of a computer anticipating my every move would feel annoying," writes one reader in a forum on the story. Can network progress go too far? What do you think?

DocFinder: 4825

IBM's NHD

The fallout over IBM's sale of its Network Hardware Division to Cisco continues, at least as judged by the comments in our "Good-bye to IBM's Network Hardware Division?" forum. IBM's lack of success in networking was a long time coming, one reader argues. In 1995, an IBM network contractor analyzed the competition between the two companies and why Cisco was wiping the floor with IBM. Read his report, which was circulated inside IBM, then join the discussion.

DocFinder: 4826

Quality of service

"QoS is a telecom concept which is being rapidly made obsolete as competition enters the communications market." Do you agree with this reader? Join the discussion about how the University of Southern California has rejected quality of service (QoS) in favor of adding pipes. Plus, listen to a discussion of QoS by *Network World* columnists Scott Bradner, James Kobielus and Tom Nolle. Then link to articles and primers on QoS.

DocFinder: 4827

VPNs

We recently updated our VPN Net Resources page with links to primers, advanced VPN topics and recent product and technology news.

DocFinder: 4828

3Com and Palm

Is 3Com making the right decision in spinning off its Palm handheld division? Fred McClimans says yes. The move will let 3Com better focus on its core network products. But Palm faces an uncertain future, McClimans says.

DocFinder: 4829

Help Desk

Fusion's favorite user on the island of Fiji is having a problem with his Cisco 1600 router — whenever he boots up, he gets an error message indicating some sort of transceiver problem. Read the details, then help him out.

DocFinder: 4830

IPv6

What are your plans for IPv6? Have the improvements to the current IP been enough, or are you waiting for more Ipv6 products? Let us know in the IPv6 forum.

DocFinder: 4831

Buyer's Guides

Our Buyer's Guides feature detailed vendor specifications on specific products in a searchable database, along with a feature that lets you compare two or more products in a number of areas. Plus, see what our reviewers had to say about several models in each category. We currently have online Buyer's Guides for network-monitoring software, firewalls, load balancers, VPNs and remote-access servers, and more.

DocFinder: 4832

Help Desk

Ron Nutter is standing by to answer your networking questions. Read his column every week on Fusion. DocFinder: 2450

www.nwfusion.com

Defusing a ticking time BOMB

Being able to recognize the warning signs of workplace violence may help you prevent a tragedy.

BY MEL MANDELL

The recent tragic shooting sprees in schools, offices and even churches show that few environments are immune to violence.

Each year, 1.5 million employees are victims of assault in the workplace, according to the Occupational Safety and Health Administration. Most victims survive, but it's still shocking to think that nearly 1,000 people — or almost 7% — are killed in the workplace each year.

While the emotional toll these incidents take on workers is immeasurable, the attacks and resulting disruption cost U.S. businesses an estimated $40 billion per year, says Steve Kaufer, co-founder of the Workplace Violence Research Institute in Palm Springs, Calif.

The good news is that there are several things you can do to prevent workplace violence, or at least minimize the damage. Consider the following advice from corporate security experts and share it with your colleagues.

Warning signs

Security experts who have studied workplace violence have been able to identify certain behaviors and characteristics of the perpetrators. Training vendor Corpedia Training Technologies in Mesa, Ariz., identifies these warning signals that an employee may have the potential for violence:

- Believes he has been singled out for unfair treatment, thinks he is always right or exhibits self-destructive behavior.
- Embraces extremist views, such as conspiracy theories and extreme political or religious convictions.
- Exhibits signs of instability, such as depression, withdrawal or dramatic changes in personality. Other symptoms include extreme self-criticism, stress, intense guilt, shame or hopelessness.
- Acts withdrawn or acts jealous, is resentful of authority, paranoid or overly concerned with personal privacy.

John Horn, senior managing director at international security agency Kroll Associates in New York, lists a few more indicators: alcohol and/or substance abuse; a severe drop in performance; and an intimidating personality that scares others.

Moreover, be especially concerned about late-stage indications of potential eruptions, such as anxiety-related rapid breathing or broken speech patterns. Or the worker may simply be detached and distant. Watch for a blank expression, inability to concentrate and mental deterioration.

"Individuals don't suddenly snap," Kaufer says. "What motivates them to violence builds up."

Responding to threats

Here's what to do if you spot signs of potential violence:

- If you hear about the behavior secondhand, be sure to substantiate the charges.
- Never ignore a threat. It's better to err on the side of caution and report all threats to corporate management and the appropriate authorities. Threats of violence that have been ignored have resulted in tragic consequences.
- If the threat proves credible, immediately launch a background investigation through a security agency. Find out if the individual is prone to violence or has ever been charged and convicted of assault. Does the worker have access to weapons?
- Remove the person from the office through a paid leave of absence for counseling, medical treatment or even commitment, says Weldon Kennedy, a former deputy director of the FBI and current vice chairman of the Guardsmark security agency in Memphis. Don't fire the employee; this could trigger extreme violence.
- Notify the authorities and seek a restraining order to keep the employee away from the people he threatened. But don't expect the police to assume the costly burden of guarding the homes of the potential victims. If the threats are severe enough, your firm may have to provide armed protection.
- Once an aggressor has been placed on leave, cancel his access codes to the building and disable all network accounts and passwords to prevent him from sabotaging the network. Install a patch to your network authentication system that alerts security if the person tries to use his logon.

When all else fails

In spite of all the warnings, colleagues or managers may not detect potential violence or take appropriate action. If that happens, follow these tips for coping with a hostile individual.

- Warn other employees of danger. Remain calm and compliant, but alert your colleagues as soon as possible. Don't hesitate to call the police.
- Obey the aggressor's demands within reason. Stall for time until help arrives by complying with all reasonable requests. Never threaten or ignore the person or try to disarm him.
- Don't do anything that might ignite a troubled individual. Maintain eye contact, speak slowly and clearly, and avoid any sudden or startling movements.
- Try to escape. If you succeed, summon help immediately and don't return.

Mandell is a freelance writer in New York. He can be reached at melmandell@aol.com.

More Online

- Find out more about workplace violence prevention programs and training resources.

FIND IT → 4833 ON FUSION

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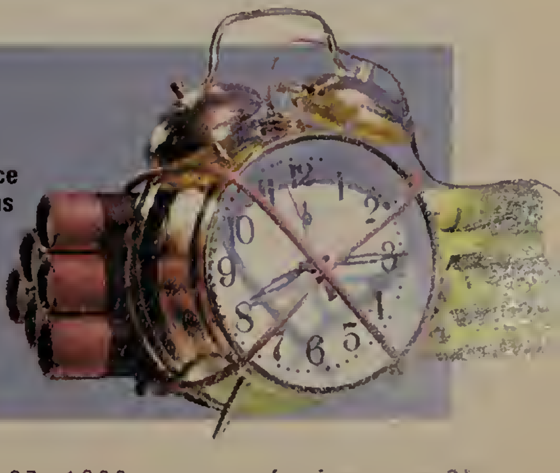

Editorial Insights

Tracking frame trends

One of the things I did at Interop two weeks ago was pester people about frame relay network trends.

Conventional wisdom had it that frame growth would start to taper off by now, slowed by the adoption of ATM and Internet-based virtual private networks (VPN). And based on feedback from carriers, that is happening, but not as fast as initially thought.

Although percentage growth figures vary, most carriers say they are expecting 50% growth in ports this year. That's down from 70% to 100% annual port growth for the past few years. Most carriers expect growth to slow to 30% to 40% next year, but by then, market researchers say the frame service market will be a $7.5 billion business.

General trends these carriers report:

- Speeds are climbing. While 56K bit/sec access is still the norm, all carriers report greater demand for 128K, 256K and even 384K. The emergence of DSL as an access option will help propel the migration upward.
- Marrying frame to IP and the Internet is creating interesting hybrids. MCI WorldCom's Frame Relay Internet Gateway service lets customers access the Internet using existing frame trunks. And AT&T's IP Enabled Frame Relay service, scheduled for commercial availability next month, will let you build fully meshed frame networks that still only require a single permanent virtual circuit (PVC) per location. The secret: use of tag switching to label packets at the edge so they cross predefined IP paths.
- MCI WorldCom reports that demand for frame relay to ATM interworking has been greater in the past nine months than it has been in the past three years.
- The largest customers are building ATM core networks that are fed by frame. T-3 trunks are used to link ATM nodes that are dropped into regions as amalgamation points for frame relay links. Qwest points out, however, that some customers prefer the simplicity of frame and are simply building fatter frame backbones.
- ATM is emerging as an attractive alternative to frame in some situations, particularly at T-1 speeds. Qwest, which prices T-1 and T-3 ATM at the same level as similar speed frame relay (less when you include the frame PVC costs), says ATM is growing at 80% to 100% per year.

The great unknown is how migration to 'Net-based VPNs will slow adoption of frame relay. But everyone agreed that VPNs won't displace frame in the next five years because of concerns about things such as security and latency. Many, however, see VPNs as the ultimate endgame.

— John Dix
jdix@nww.com

Message Queue

PALM READING

In his "Gearhead" column "Putting wireless network power in the palm" (Sept. 6, page 42), Mark Gibbs asks readers to tell him about cool Palm Query Applications (PQA) they've generated.

I wrote my first PQA as a simple pager application. It presents a pull-down menu of choices that allows me to send a text page to a pager by selecting a person's name and common phrases.

Basically, my PQA sends the parameters to the server, where a server-side application service provider script generates an e-mail message of the form user-phone number@page.nextel.com. Of course, I could simply send the e-mail from the Palm, but the PQA adds a friendly, high-level user interface and avoids sending a lot of text over the wireless link.

A few other points:

- Although, as Gibbs notes, the 3Com Palm VII is sold only in New York, those interested can purchase it via mail order from J & R Electronics (www.jandr. com), which ships anywhere in the U.S.
- Web Clipping is a lot less mysterious than it sounds. First, everything travelling to and from the Palm VII wireless link goes through 3Com's proxy server farm called Palm.net. The Palm VII is programmed to display only the first few characters of a Web site URL when a non-Palm VII-specific Web site is referenced. (You can't simply enter a URL and browse to it using the Palm VII, but it is easy to create a PQA applet that will allow you to enter an arbitrary URL.)
- The hidden "killer app" of the Web Clipping scenario is that it provides the first program development environment based on a scripting language for the Palm personal digital assistant. Prior to the Palm VII, you had to be a C programmer to write a Palm application, even a trivial one.

Currently, the subset HTML in the Palm does not support much client-side scripting, so what you can actually accomplish is limited. When and if 3Com adds client-side scripting support, the Palm's potential will be huge.

Robert Spivack
Vice president, sales and marketing
SPIV Technologies Group
San Jose

HANDS OFF MY FILES

Regarding Mark Gibbs' "Backspin" column about the problems he encountered when he tried to rid his computer of a false-alarm virus ("Hairstyling tips for computer users," Sept. 6, page 86):

There's no need to go into the details of the many times similar things have happened to me. I brushed off most of these incidents because, being a techie, I like to play around with my machine, tweaking this and that. Apparently, an average user can destroy a computer just as easily as a trained professional.

Some of the problem comes from a simple fact that could be corrected if the people at Microsoft knew how to really write an operating system: Don't allow applications to change system files!

I don't think I've ever heard of someone installing an application on a Unix box and having the system then be unbootable (a system patch maybe, but not an application). Why? In Unix, there is a clear line drawn between applications and the operating system. Yes, they work together, but a Unix application won't put an older copy of an important Dynamic Link Library or driver file in your system folder with total disregard to the fact that the one already present is newer.

If an application detects that certain minimum system requirements have not been met, it should simply tell you to take the appropriate steps to update your system and refuse to install. Instead, most try to be friendly and replace key system files with ones that application vendors know will work with their applications — who cares what's broken in the process.

Steve Pasikowski
Network administrator
Accident Fund Company
Lansing, Mich.

Send letters to nwnews@nww.com or John Gallant, editorial director, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

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Bottom Line . Joel Snyder

STILLBORN IPv6 OFFERS NO COMPELLING REASONS TO SWITCH

Recently, I had a chance to dine with some of the top network implementers in the world: the people who put together NetWorld+Interop's network twice a year. These folks have been through every advanced technology you can imagine. For them, Internet Protocol Version 6 (IPv6) is old hat — Interop showcased an IPv6 network years ago. "So when will IPv6 hit the mainstream?" I asked. Their answer: "Never."

IPv6, the next version of the venerable IPv4 protocol used in the Internet, was designed to solve the problem of address exhaustion. There's more to IPv6 than that, of course; for example, it includes IP Security virtual private network security as a built-in, rather than add-on, feature. But IPv6's fundamental design is built around the shortage of 32-bit integers assigned as IP addresses.

While IPv6 was going through its highly contentious and political development, the Internet engineers devised alternate techniques that help to reduce the need for globally unique IP addresses, including classless inter-domain routing (CIDR) and network/port address translation technologies. These alternate technologies were wildly successful. Thus, there is no longer a compelling need to run to IPv6 — and because of the high cost of switching to IPv6, there are great pressures not to change.

Globally unique and routable IP addresses have become a scarcer and much more expensive resource, and the Internet routing tables have exploded. At 62,000 routes, it takes a substantial amount of CPU power and memory to handle those tables. Hint: buy Cisco, Nortel Networks and 3Com stock — they're going to make a lot of money selling upgraded routers powerful enough to handle the Internet. In the meantime, organizations are hoarding IP addresses. Building a fault-tolerant Internet connection is expensive, complex and difficult.

This could be solved if we used IPv6. For example, if IP addresses started to become long and ugly, people wouldn't want to hold onto them and might start using the Domain Name System to solve some of their IP addressing issues.

It's easy to throw stones at Microsoft, which is not going to release IPv6 with Windows 2000 (and probably not with Windows 2001, either). But even if IPv6 did ship with Windows 2000 next month or next year, it wouldn't matter; organizations wouldn't use it. In the absence of a major crisis, why screw with a company LAN that's just barely under control today?

We're not going to go to IPv6 because it doesn't solve a lot of the other problems we are discovering in managing and maintaining the Internet — and because there is no longer a compelling reason to do so. But IPv4 does have a limited life. There will be some other protocol designed to solve the problems of the next century. And that protocol will eventually replace IPv4, first in the backbone infrastructure and then moving out to the desktop. In the meantime, chill out, learn your CIDR tables and prepare to buy some fatter routers.

Snyder, a Network World Test Alliance partner, is a senior partner at Opus One in Tucson, Ariz. He can be reached at jms@opus1.com.

Speaking the LANguage . Linda Musthaler

ASPs MAKE A STRONG CASE FOR RENTING VS. BUYING APPS

Why buy when you can rent? Sounds like an ad for a car leasing company, doesn't it? Well, get ready for the "rent vs. buy" argument in your IT shop because application service providers (ASP) are coming on strong.

ASPs offer a new twist on outsourcing: Instead of outsourcing all your IT functions, you outsource your application hosting. Your ASP operates a data center, and hosts and manages your applications, which you access via the Internet. ASPs are becoming all the rage, especially for small to mid-size companies with minimal IT departments and budgets.

In fact, the ASP computing model just might be the great equalizer between big and small companies. For years, small companies were at a disadvantage because they couldn't afford million-dollar applications, such as enterprise resource planning or data warehousing. Now a small company can turn to an ASP to rent access to the same applications the big companies run.

Application hosting isn't strictly for the data center, either. It's about to play on a desktop device near you. Recently, Sun announced big plans for the ASP market involving the office productivity software Sun is acquiring through its purchase of Star Division Software. Sun intends to make its StarOffice desktop applications available free over the Internet. All a user needs to run, say, word processing, is a Web browser and access to the Internet.

Not to be outdone, Microsoft has announced a strategy to host access to Microsoft Office over the Internet. While specifics of this offering aren't clear yet, the company is unlikely to give away its cash cow. Instead, it will fight the battle on the virtue of features and compatibility, hoping that people will be willing to pay to rent access to Office over the Web.

Though the ASP model is in its infancy, it has a lot of support behind it. Membership in the ASP Industry Consortium, founded in May by industry heavyweights such as IBM, Compaq, AT&T, Cisco and Sun, is growing by leaps and bounds. The potential ASP market is huge, and all the players want a hand in educating the marketplace on their particular value propositions.

Just what are the benefits of renting applications? Well, for starters, your company can save money on capital IT investments. Instead of *you* buying, supporting and managing the servers, network gear and storage systems, the ASP buys these things, and leverages them across multiple customers. You pay monthly rent for the systems and applications you need, helping to make your IT costs more predictable and hopefully more manageable as you pay only for what you need. As a bonus, when the host server needs an upgrade, it's not your hassle.

Some companies find they are able to deploy an application much more quickly through an ASP. For example, USinternetworking (USi), an ASP in Annapolis, Md., claims it has set up complete electronic commerce applications for customers in less than two months. USi got Perfumania.com's e-commerce site up and running within 45 days —something the perfume retailer says it could not have done on its own.

YUCEL

One obvious benefit of the ASP model is that you don't have to have a lot of IT professionals on your own staff. Given that IT expertise is expensive and in short supply these days, anything to reduce your dependency is a good thing.

Some interesting Web sites offer a view into the ASP world. These include:

- www.webharbor.com — billed as the ASP industry portal; go here to find an ASP or simply keep up with industry news.
- www.aspnews.com — primarily geared to ASPs, but also serves the client community by providing consolidated news about the industry.
- www.aspindustry.org — the ASP Industry Consortium's Web site; provides information on task group activities as well as ASP news and events.

With everyone looking for the fastest way to exploit e-commerce and the Internet, ASPs are the wave of the IT future. Start planning how they will fit into yours.

Musthaler is vice president of Currid & Company, a Houston-based technology assessment firm. She can be reached at linda@currid.com.

@londonparistokyo
Chase is an IBM e-business

New integration software from IBM is helping The Chase Manhattan Bank reshape a world of systems into a single worldwide business platform. Can an IBM business integration solution help you?

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In financial services, information is the raw material of new services and the bond in customer relationships – which are everything to Chase. To add value for clients, many of whom are financial leaders themselves, Chase is leveraging IT assets across business units in a dynamic new way. Instead of integrating systems one by one, they are integrating business processes from end to end with powerful new software from IBM.

This business integration software is designed to work across 100% of all systems in commercial use. At Chase, it is eliminating technology barriers among mainframes, UNIX® and Windows NT® environments, transforming Chase's custody business units everywhere into a single worldwide platform. For example, data from 83 markets and 30 external vendors is now validated automatically by MQSeries® Integrator as it arrives. Work flow is directed to the units best able to execute before market deadlines pass, affording Chase more time to analyze the world's financial information and apply it to the business.

As business goals evolve, the IT infrastructure is "already ready" to respond – a strategic advantage for Chase. "This allows us to stretch our imaginations," says Global Technology Executive Paula Sausville, "to deliver really powerful solutions to the business." IBM business integration software is also stretching imaginations at companies as diverse as Toyota and Texas Instruments. You'll find their stories and others at our Web site.

For business integration case studies in different industries, InfoPack and free seminars, visit us on the Web at www.ibm.com/software/big/systems

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THE *Signature* SERIES

The Buzz Issue

is one of six bimonthly special supplements providing insights, opinions and information on the biggest trends shaping the networked world. Look for the best of everything in networking, from products to projects and management techniques, in the next Signature Series installment, The Best Issue, coming Nov. 15.

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Buzz online. Visit our special Network World Fusion minisite (www.nwfusion.com/buzz) for another zap of buzz. You'll find:

- The word from our columnists on all this buzz, in their own voices. Our pundits are renowned for separating hype from reality. So we corralled several of them for their no-holds-barred opinions on the technologies in this year's Buzz Issue and uploaded their thoughts in audio for your listening pleasure. (Or you can download the text version.) DocFinder: 4851
- The Absurd Buzzword contest. In this quiz, we challenge you to talk the talk. Can you determine which absurd network term is bogus and which is bona fide? Those who can will be entered in a drawing to win absurd prizes. DocFinder: 4852

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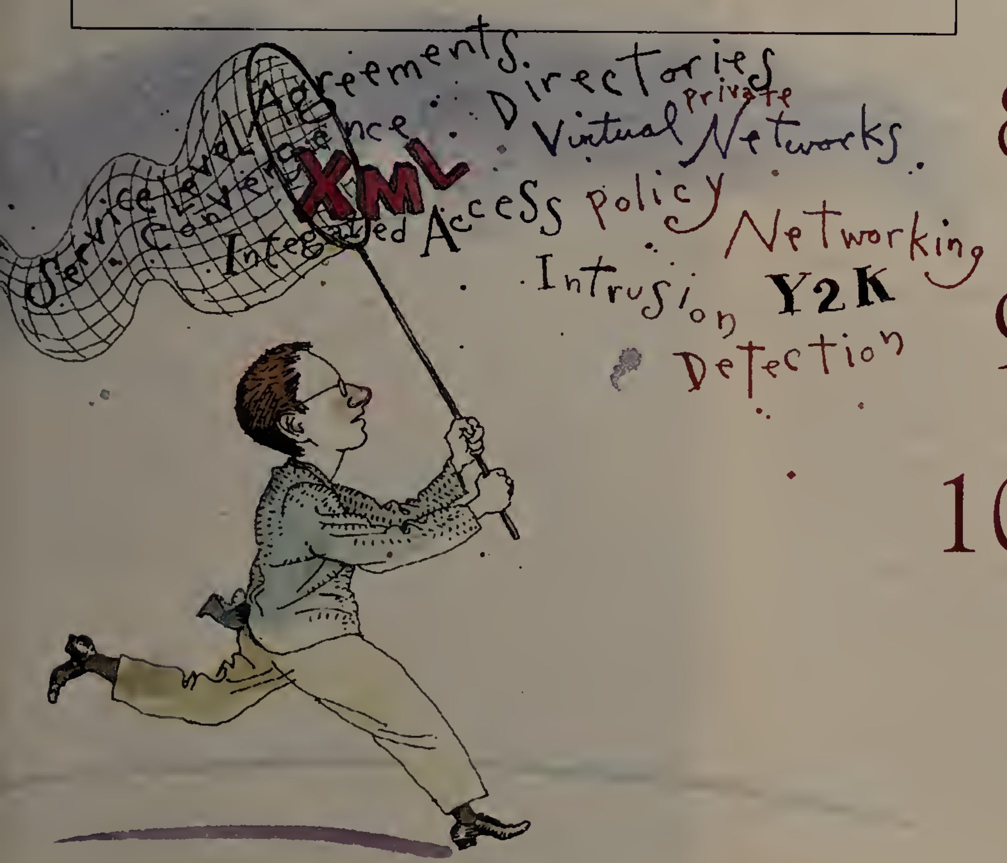


Cover, Contents and Signature Sign-off illustrations by Joe Ciardiello

BEYOND THE BUZZ

Go ahead, admit it: Beneath your calm, cool exterior you're really all a jitter. It's this fast-paced network business. Every way you turn, you're bombarded with technology buzzwords.

Sure, networking has always been laden with techno-jargon, punctuated by three- or four-letter acronyms. But in the old days, you could sink your teeth into the stuff much more gradually. Heck, aren't we almost a decade and a half into explaining what exactly ISDN is?

These days, you don't have the luxury of slowly studying a technology and learning what it could mean for your network. Chances are, your boss might stop by tomorrow and ask why you haven't outsourced the corporate enterprise resource planning application, built a virtual private network or installed that hot new intrusion-detection software he's been hearing so much about.

You have to have an answer on the spot or at least by day's end. Otherwise, you stand the chance of appearing like a technology laggard, no matter that you've spent years building a sophisticated network infrastructure that will handle the company's voice and data needs through the next century.

We hope this, our third-annual Buzz Issue, provides a soothing antidote to the bombardment. We start by giving you five handy tips for controlling the buzz within your company, then we explore the most scalding of the hot network buzzwords out there. We dig beyond the marketing hype for a no-nonsense look at what these buzzwords mean for enterprise users — now and in the future.

Here's to a more relaxed future.

— Beth Schultz
Executive Editor, Signature Series
bschultz@nww.com

ON THE BUZZ PATROL

HERE ARE FIVE TIPS TO FOLLOW SO YOU'RE NOT CAUGHT OFF GUARD WHEN THE CEO HITS YOU WITH A QUESTION ON THE LATEST TECHNOLOGY BUZZWORD.

By Sandra Gittlen

Ten years ago, Krista Cabrera's boss came into her office and told her to rip out all the LAN wiring strung throughout the health-care company at which they worked.

"We can run this network without cables!" the department chair exclaimed.

Cabrera, who has since left that job for another within the same corporation, was stunned — she considered wireless at least a decade away. But her boss had just read an article from the mainstream press saying how wireless was just around the corner. He bought the buzz — hook, line and sinker.

Cabrera, who was a system support engineer, managed to quell her boss' enthusiasm. She did so by convincing him that the company's 10M bit/sec Ethernet network would slow to 2M bit/sec if she yanked the wires.

The buzz problem has worsened with the advent of TV, Internet and daily newspaper technology reports. Far from being instrumental, these dispatches are quite often detrimental, network managers say. Corporate executives get caught up in the buzz surrounding some new technology and badger network managers about implementing it. Often the technology is immature or just plain bad for the network.

"It's hard for managers to understand that technology isn't implemented in a vacuum," Cabrera says.

John Gambriel, program manager for telecom and infrastructure at the U.S. Department of Agriculture (USDA), agrees. "These reports contribute to the problem," he says. "They only give readers a little snippet about the technology."

And no one, especially someone who doesn't know networking, can make a spot decision on whether the hyped technology would work in the enterprise network. Network managers increasingly find themselves playing spin doctor for the buzz heard by their higher-ups. What follows is a list of tips for how to control the buzz.

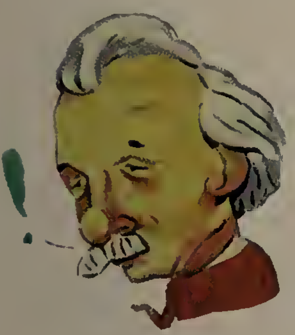
1. Read what your managers are reading.

Gambriel, for instance, has added three publications read by his supervisors — *Government Computer News, Federal Computer Week* and *Government Executive* — to his reading list of more than 25 magazines. "It's hard to get through all the magazines, but it saves my butt. I know the buzz as soon as it becomes buzz," he says.

Knowing where his bosses get their information makes it easier to converse with them about the technology, Gambriel says. On occasion, he can even beat them to the punch.

COLUMNIST'S CALL. **"It comes down to the need for a CIO or that kind of a person within an organization whose fundamental job is to survey the environment of technologies being buzzed about and explain to the nontechnical and technical people how these issues fit into the company's broad strategic plan."** — James Kobielus, "Above the Cloud" columnist

"Sometimes these magazines will throw out a buzzword and never explain it," he says. If Gambriel knows the technology is something in which his bosses would be interested, he sends them a more detailed story or white paper. "But I have to temper the way I present the information so they don't get insulted," he adds.



2. Establish yourself as the knowledge worker.

"The mainstream press approaches technology from the management and business perspective, and that kind of reporting sets up bombshells for network managers," says Rich Giltner, lead network analyst at Fingerhut Companies, a direct marketing and online retailer based in Minnetonka, Minn.

To diffuse those bombs, you have to be well-versed in the latest network technologies, Giltner says. He recommends that network executives not only subscribe to all trade magazine e-mail newsletters, but also forward relevant articles to their team and interested managers. Better that than having to control the spin later, he says.

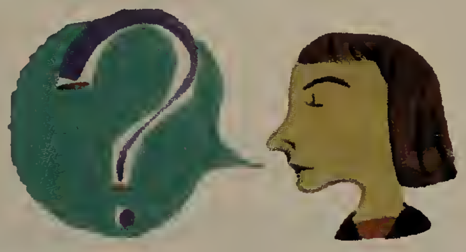
Among the information you must know are the positives and negatives about certain technologies, Giltner says. That way, if you are ever asked whether a new technology will work in the network, you can quickly give your boss a well-reasoned answer.

Keeping everyone on the same page has avoided some real panic, Giltner says. While the outside world is pulling its hair out over Year 2000, folks at Fingerhut aren't caught up in the buzz anymore. Concerns have been assuaged because Giltner's team dealt with the network's Y2K compliance and updated all company employees about its findings.

The USDA's Gambriel agrees with Giltner's tactic. He says you want to make yourself the person to whom your supervisor comes with technology questions: "It's OK to say, 'I don't know,' but you better be able to find out quickly and thoroughly."

Splitting the knowledge workload among staff members helps considerably, says Ramin Farrassat, network services manager at Roche Bioscience in Palo Alto. Each person on Farrassat's team is responsible for knowing everything that's printed about a specific technology.

"I don't care about particular products; I want them to understand how the technology works so they can answer questions," he says.



3. Ask for justification.

Executives are quick to ask for new technologies until they are faced with the cold, hard reality of cost. The first thing Farrassat does when a user or manager asks him to implement a new technology is ask for a business case and cost-justification.

"If what they want to do is cost-justified, then I schedule a pilot test," he says.

The USDA's Gambriel discovered what effect unforeseen costs can have on a technology decision when a previous boss asked him to eliminate Intel-based PCs in favor of Macs. Reluctantly, Gambriel bought Macs for one-third of his user community. Then the bills started piling up.

Because the organization ran a 3Com, NetWare and IPX shop, it was unfamiliar with Mac network issues. Hiring expensive Mac technicians, conducting more training and shelving spare parts skyrocketed costs more than 200% over a period of several months, Gambriel says.

"It took six months to convince my boss it was a bad idea," says Gambriel, adding that the USDA has migrated back to its old Intel machines.

Focus is key, emphasizes Brandon Fouts, network administrator at the Washington State Hospital Association (WSHA) in Seattle. "I get people focused on the problem they want to solve or the goal they want to reach," he says. "Everyone is so quick to tell you they want something done; I just ask, 'What will it get you?' And I try to keep it positive."

4. Be part of your corporate community.

Too often, executives decide they want to implement a new technology and call in a consultant before soliciting advice from the network folks. Before a network manager knows it, he's having a one on one with the consultant about the consultant's findings, which have nothing to do with real-world testing. The net manager is then forced to implement the consultant's recommendations because a ton of money was spent to hire the consultant in the first place.

Network managers can easily avoid this scenario by participating in the corporate process. "You have to be in the loop of the whole company, not just your department," Gambriel says.

It's imperative that network managers be a part of the group for choosing all company consultants and on the committee that reviews the consultant's findings and decides how to implement them, Gambriel says.

5. Pick your battles.

One of the hardest lessons to learn about controlling the buzz is that sometimes you win, sometimes you lose.

The WSHA's Fouts says he's constantly deciding which battles to wage. The Microsoft Office upgrade decision proved particularly contentious, he notes.

"People always want to upgrade to the latest Microsoft Office, and I always ask them, 'What kinds of things will the new version help you do that the current version can't?'" Half the time, Fouts says, the desired feature exists in the current software version.

Fouts stood his ground on Windows 95, leapfrogging from 3.X to NT. "I skipped all the headaches of Office 95 and Windows 95, and saved money on upgrades and training."

And while managers can usually be swayed by a good cost argument, sometimes they overrule you, Fouts adds.

For instance, his organization had a faxing program that cost less than $2,000 and worked well for two years. When the WSHA overhauled its phone system, the vendor suggested installing a new $10,000 fax system. Fouts fought hard to skip the new product, but was outranked.

"There are times when you just have to grin and bear it."

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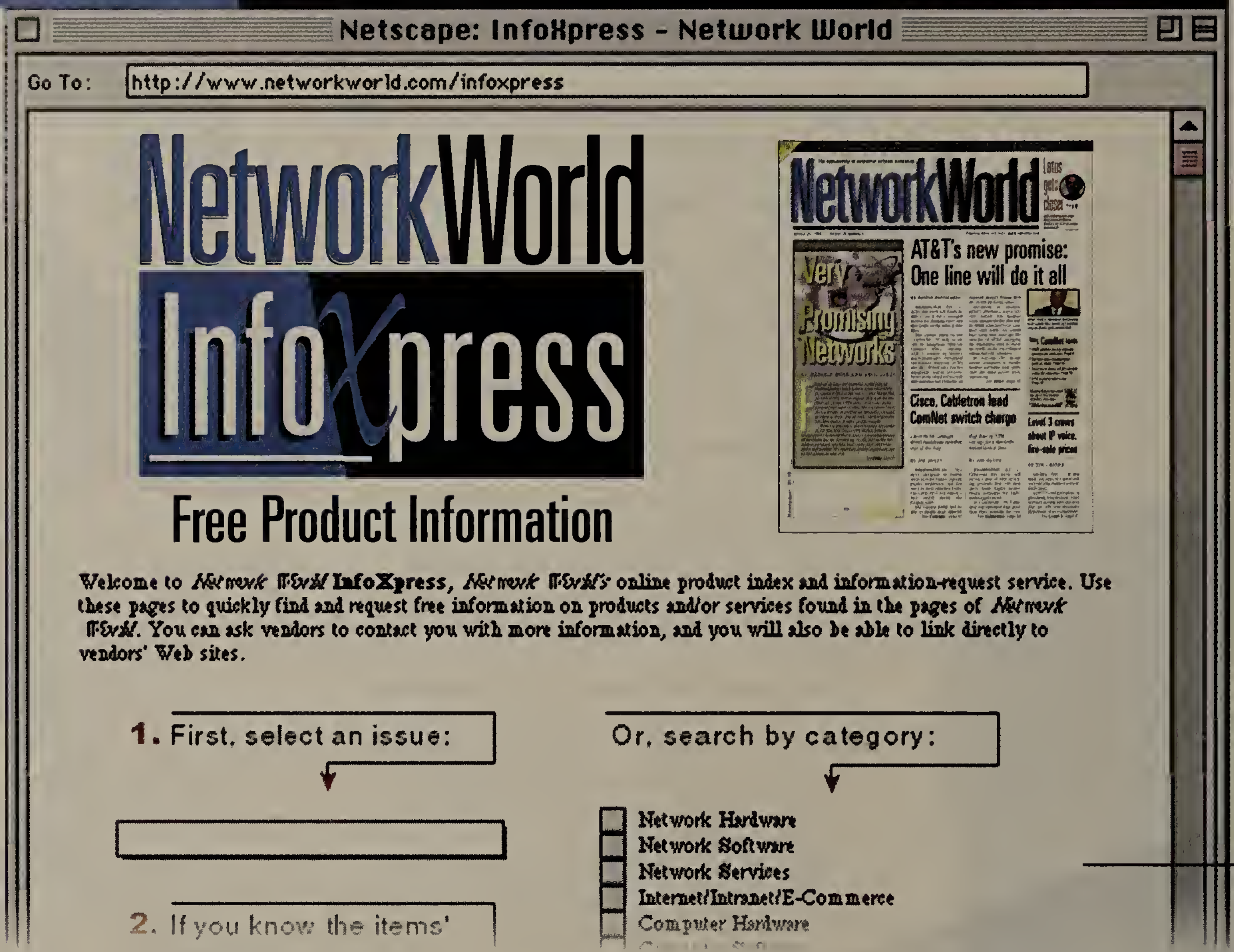

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COLUMNIST'S CALL. "People pushing for Internet SLAs forget that the original glass house SLAs were contracts in which the provider agreed to a set system response time. Today's pundits want a max response time independent of the level of requests. Sorry, but physics doesn't work that way." — Scott Bradner, "'Net Insider" columnist

SLA SAVVY

Service Level Agreements

FIVE SECRETS FOR MAKING SURE YOU GET THE MOST FROM YOUR SERVICE-LEVEL AGREEMENTS.

By Julie Bort

True or false: A service-level agreement is a distinct type of legal document in which service providers stipulate their commitments and also their penance. Answer: False. Truth be told, "SLA" is just a new-age term for the age-old telecom contract.

"There's nothing special about an SLA. It's a legal contract like any other," says David Simpson, founding partner in Young, Harlick, Wilson and Simpson, a San Francisco law firm that specializes in telecom contracts.

FEATURE ILLUSTRATIONS BY AMANDA G. DUFFY

So why coin a phrase?

In years past, carriers wrote the contracts, and network executives simply signed them. Today, net execs have taken the upper hand, negotiating hard for pricing, performance and penalties. Enter the need for tools for verifying that carriers meet the terms of these contracts, and for a jazzy new name for the agreements themselves. After all, without a nifty buzzword, how else would vendors be able to sell these new tools?

Cynicism aside, drafting a contract and verifying that you're getting what you've paid for are real and valid expenditures of time and money. Today's service contracts — or SLAs, to keep with the buzz — are hugely complex. An SLA stipulates the delivery of numerous service levels and spells out penalties for shortfalls. But only the best SLAs are negotiated well enough to lock a provider into the promises made by its salespeople.

"An SLA is, in effect, pricing. You ask for a certain commitment for a certain price," says Ellen Van Cleve, datacom director for a Fortune 500 company and a vice president of the Communications Managers Association (CMA). "You must clarify what that means and how it's measured."

SLAs cover an assortment of data services: frame relay, leased lines, Internet access, Web hosting and outsourcing. While each one of these has its own set of contractual gotchas, experts say that several guidelines apply to all SLAs.

The best way to understand SLAs is to break them into two pieces: negotiating the technology agreement and verifying that promises made are promises kept. Within each of these areas, experienced SLA negotiators offer these tips for a winning deal.

Tip No. 1: Figure out what it's worth.

Define exactly what your needs are and how much they are worth. End-user perception is a good guideline for determining your needs, says Jason Czaplewski, network systems analyst for Shands Hospital, a Gainesville, Fla., institution that runs a statewide WAN composed of frame relay, leased lines, T-1s and fractional T-1s, plus ISDN.

"If, at less than 99%, users start complaining the network is always down, we need to contract for 99% [of successful frame transmissions]," he says.

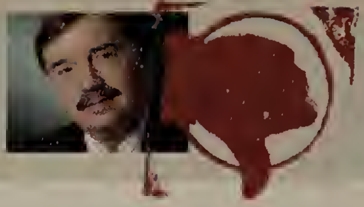
In other words, "quantify from a business perspective what your real requirements are. Then you can deal with determining your system requirements," says Lightsey Wallace, principal of Lightsey Enterprises, a datacom quality consultant in Fairfax Station, Va., and a leader of a TeleManagement Forum QoS/SLA working group.

Still, you can assume some numbers. For instance, Wallace finds that a typical SLA requirement for T-1 and frame relay service should be 99.93% availability, which is 60 seconds of disrupted service in 24 hours. But beware — carriers can trickily coat this statistic in the term "mean time to restore (MTTR)." Availability expressed as MTTR is a trap because, by definition, it's an average.

If you've negotiated for a MTTR of 60 seconds per 24-hour period (thinking you've gotten 99.93% availability), that doesn't automatically mean no more than 31 minutes of downtime per month. The service provider could have 10 minutes of downtime 15 days out of the month, and two-second outages every other day in the month, and still average less than one minute of downtime per day. Availability and MTTR therefore need to be coupled with a maximum time to restore, a specific length the network can be down for a specified period, expressed as a daily or, perhaps, monthly figure. Specifying a MTTR of 60 seconds and a maximum time to restore of 31 minutes per month would be more in your favor.

Other well-accepted statistics include three hours per month scheduled downtime for maintenance, and a network mean time between failures of two hours (again coupled with a maximum time between failures that jibes with your negotiated availability).

Performance should be in user-satisfaction terms. One accepted standard is the "three-second response,"



COLUMNIST'S CALL. "The average SLA a buyer negotiates with the service provider guarantees the wrong parameters or too few parameters to be meaningful."
— Thomas Nolle, "Reality Check" columnist

DOUGLAS WOODS

Lightsey Wallace, a datacom quality consultant, says users should use the "three strikes you're out" rule in specifying when their SLAs become void.

Wallace says. That is, the reply from the application should take no longer then three seconds to respond once the user hits the Enter key. For real-time networks, such as those used by financial traders, a subsecond response is required.

The guideline for a value that indicates a service provider has defaulted on its SLA should be the old "three strikes you're out" rule. If you report three to five trouble tickets on the same service area point (SAP) — meaning, a piece of equipment or circuit — and the service provider can't resolve the problem, the trouble ticket should be escalated to a "vendor meet," Wallace says. At this level, all vendors involved meet to fix the problem. Three vendor meets on the same SAP, even if for different problems, should nullify the contract.

Pricing remains the trickiest part. Like a car dealer, a carrier is not going to reveal the deals it made with others. Unfortunately, many users keep negotiated prices close to their vests, as well. Yet pressure is mounting for service providers to create tiered service — say, Gold, Silver and Bronze levels — and publish the pricing for each. ISPs might lead the way.

Tip No. 2: Know how the carrier net is designed.

Don't impose service levels; design for what is offered, Wallace says. The truth is, no matter what a service provider promises, it can only give you what its network is capable of. By contracting only for what a service provider can provide realistically, a network executive can then implement measures to ensure availability via redundancy and fail-safes, for example.

Good guidelines for what a service provider should present as reasonable network capabilities can be found on a handful of Web sites that publish performance metrics. For example, check out UUNET's monthly latency statistics at www.uunet.com/lang.en/customers/sla/latency.html or AT&T's IP Network Status Site at http://ipnetwork.bgtmo.ip.att.net/averages.html. At its site, AT&T serves up real-time backbone statistics as well as target and achieved statistics for the prior month. In August, for example, AT&T reported that it hit 51 msec for delay; 0.11% packet loss; 99.9% availability and 98% modem connection success rates.

The difficulty is getting service providers to offer apples-to-apples statistics on network reliability. To help you make comparisons, ensure that network descriptions clearly define what is measured, where it is measured, the time period over which measurements are taken and time of day.

Of utmost importance is how a service provider measures traffic that traverses backbones, as this area is laden with strife for users and is least likely to be covered by an SLA (see next tip). For instance, in the AT&T example cited earlier, the target performance was between city pairs on its backbone, not end-to-end measurements.

SLA validation tool maker VisualNetworks offers an SLA template that was produced by TeleChoice, a consulting firm in Owasso, Okla. Available by registering at www.visualnetworks.com/corp/corpslaform.htm, the template includes the following advice on end-to-end performance: The average end-to-end round trip delay for each permanent virtual circuit should be 110 msec for a T-1, 140 msec for 256K bit/sec and 230 msec for 56/64K bit/sec.

Tip No. 3: Assess your carrier's partnerships.

Accountability is a slippery thing. No matter what the salesperson promises, a contract's fine print will limit the service provider's liability to its network. That's understandable but not practical, particularly for services for which multibackbone paths are the rule. In such cases, the "it's not our fault or our problem" attitude stinks, Van Cleve says.

Through the SLA, negotiate for carriers to work together. This will minimize blame between service providers and hand-offs from one technical support center to another, says Rich Glasberg, director of data communication for the Commonwealth of Massachusetts, which supports 147 state agencies with a frame relay network from Bell Atlantic.

Glasberg negotiated for Bell Atlantic to be the point of contact for intercarrier technical problems. He then worked with the company to create intercarrier procedures for addressing problems. One requirement, for example, was the establishment of a standardized way of testing all circuits on any network.

The state is willing to pay for this supreme level of support. Still, any enterprise can benefit from the lesson: Create and contract for troubleshooting procedures, not just performance and penalties.

Tip No. 4: Consult corporate counsel.

Don't wait until the end of the process to bring in the lawyers. This is a common mistake net executives make, says attorney Simpson.

Bringing the lawyer in at the outset, so he or she can find out what the business requirements are, results in faster and better negotiations. "Too often I get a contract very late in the day and it's unclear what I'm to be [protecting]," Simpson says.

Likewise, don't begin negotiations too close to the time you need service. Doing so only strengthens the vendor's hand, says Desiree LeClerc, a corporate lawyer who negotiates SLAs for Oracle.

In this age of contracts that rarely cover even three years, the time to begin negotiating a new contract is shortly after the last one is signed, CMA's Van Cleve says.

Tip No. 5: Invest in validation tools.

Although you might want your provider to prove it is meeting the SLA, nothing beats your own analysis. And you can get a startling look into your WAN

Continued on page 48

Avoiding loopholes

Omissions are deadly to an SLA. So here's a checklist of items to negotiate, along with some suggested targets (when practical). Of course, all suggested targets are simply guidelines. Your SLA should reflect your specific needs.

Outage: A change in performance that keeps user groups from being able to use the network. Can apply to any or all user groups.

Outage duration: Time in minutes that service is not available.

Degraded service: Not an outage, but service that is slower than performance contracted for.

Impacted user minutes (IUM): Outage duration multiplied by the number of affected users.

Total user minutes (TUM): Minutes in a set period multiplied by the number of users being served.

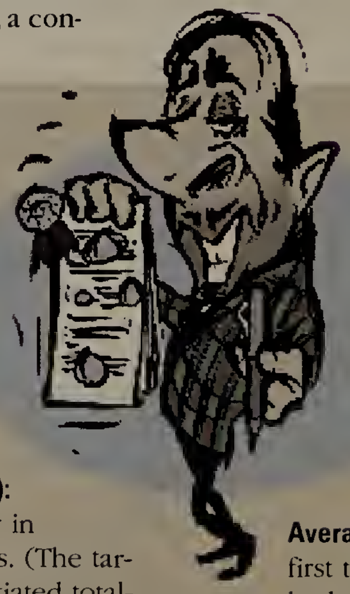
Total service availability: The total IUMs caused by all outages divided by the TUM.

Defects per million: Minutes of downtime per million minutes of service.

Mean time between failures (MTBF): Average amount of time, typically in minutes or days, between outages. (The target figure depends on your negotiated total-service-availability rate.)

Mean time to restore (MTTR): Average amount of time, typically in minutes, it takes to restore service.

Maximum time between failures/maximum time to restore: A cap on the number of minutes in total, during a specified time frame.



Trouble rate: How often tech support is called.

Repeat trouble rate: How many times the same problem is reported. (Limit to five before escalation is mandated.)

Peak hours troubleshooting (such as resolution within one hour).

Off-hours troubleshooting (such as resolution within four hours).

Average round-trip latency: The time it takes the first transmission to complete. (The target should be less than 100 msec on the backbone and up to 130 msec longer end to end, depending on the type of service being contracted for and the application requirements.)

Average round-trip delay: The time it takes for routine transmission, after the first transmission establishes the connection. (Target the same as latency.)

SPOT ILLUSTRATIONS BY JOE FOURNIER

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Continued from page 46

provider's operations from tools offered by a growing number of vendors. The genre is referred to as service-level validation, and it includes frame relay specific products such as ADC Kentrox's FrameVision, Paradyne's FrameSaver SLV and VisualNetworks' Visual UpTime.

Likewise, for services other than frame relay, vendors offer SLV tools that cull data from network management products. These include Concord Communication's Service Level Management Reports for Network Health, Netscout's Webcast, Opticom's Executive Information System and TAVVE Software's Performance Reporting Module (PRM).

SLV products let you peek into your service provider's network at the access points. The tools can help determine if a problem is inside or outside your provider's network, document the bandwidth being received and demonstrate if the pipe is too big for the company's needs.

But SLV products aren't cheap. For instance, ADC Kentrox lists its SLV-equipped DSU/CSU at $1,795 for the basic model or $2,495 for one that supports voice. And the necessary accompanying client/server software, which turns data gathered from DSU/CSUs into reports, runs about $1,000 for an installation with less than 50 DSU/CSUs and about $6,000 for networks with approximately 300 devices, says Kevin Hart, marketing manager for the Portland, Ore., company. A midsize company with 30 DSU/CSUs could face an outlay of $50,000.

SHAWN HENRY

Rich Glasberg, datacom director for the state of Massachusetts, has eliminated fingerpointing among vendors per terms of his SLA with Bell Atlantic.

TAVVE's PRM, a Web-based product that provides performance reporting from existing network management tools, costs $4,525 for smaller networks with 25 nodes or less, and as much as $160,000 for enterprise networks with 2,000 nodes — a node being any network device, regardless of ports. Likewise, Opticom's ServiceView requires ExecutiveView, which lists at $10,000, and AvailabilityView, for $5,000, plus, of course, the ServiceView module, which sells for $10,000, says Peter Cruz, director of product marketing at the Manchester, N.H., company. So we're talking $25,000 per server.

Still, users say the expense of SLV is worth it. "Without service-level validation, you're really running blind," says Glasburg, who uses Paradyne's FrameSaver SLV.

Likewise, these products can help network managers educate upper management on why the enterprise needs a bigger pipe. "When I explain to my [internal] customers why they have to upgrade, I show them the reports that tell them what's going on with their network,'" Glasburg says.

When it comes to service and all of its related buzzwords, the old axiom holds true. Good help is hard to find. But with SLAs and SLVs, good help is easier to validate.

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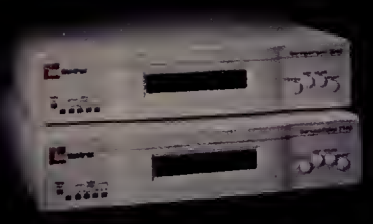

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GOT THE URGE TO CONVERGE?

COLUMNIST'S CALL. "This is a Holy Grail — somehow everything will be simple when your phone calls run over the same network that the staff is using to surf the Web. I do not think this will be simple, and not just because of technology issues." — Scott Bradner, " 'Net Insider" columnist

TECHNOLOGY ADVANCES AND STANDARDS PROGRESS ARE PUSHING ENTERPRISE-LEVEL VOICE AND DATA CONVERGENCE EVER CLOSER TO REALITY.

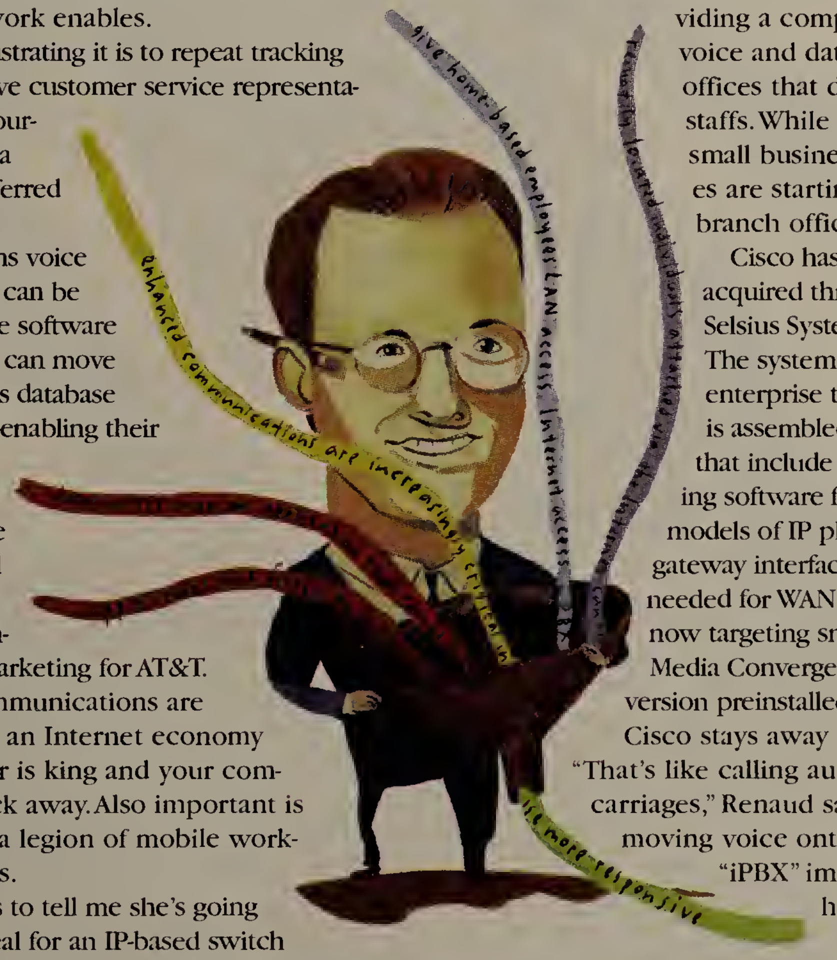
By Susan Breidenbach

The vision of a single network delivering voice and data to enterprise desktops has been like a mirage: It never gets any nearer and disappears if you look too closely. But the images of convergence may finally be more than thirst-induced fantasies.

Thanks to technology advances and emerging standards that are enabling a new generation of products, convergence is moving beyond call centers and other niches. The traditional PBX at corporate headquarters is in no immediate danger, to be sure, but small precursors to its ultimate IP-based replacement are starting to appear in branch offices.

The original premise of convergence — to save money by collapsing two network fabrics into one — is still valid, but the focus is shifting to the applications, enhanced communications and ease of management a single network enables.

Think about how frustrating it is to repeat tracking information to successive customer service representatives when you call a courier service to check on a shipment and get transferred five times. A converged voice/data network turns voice into an application that can be integrated with database software so tracking information can move with the call. This means database vendors can start voice-enabling their products.


enhanced communications are increasingly critical in
give home-based employees LAN access, Internet access
remotely located individuals attached via the Internet
be more responsive

"This is the sort of thing that will drive the migration to converged networks," says Jim Daugherty, general manager of data services marketing for AT&T.

Such enhanced communications are increasingly critical in an Internet economy in which the customer is king and your competitors are only a click away. Also important is the ability to support a legion of mobile workers and telecommuters.

"When my wife calls to tell me she's going into labor, it's no big deal for an IP-based switch to look into my scheduler, find the conference room I'm in and forward the call there," says Christian Renaud, manager of product marketing for Cisco's enterprise voice business. "Getting a traditional PBX to do that would take a whole fleet of Andersen consultants."

Because IP is distance-insensitive, convergence will help employers cope with tight labor markets by letting people work from almost anywhere. With a single line, you can give home-based employees LAN access, Internet access, a PBX extension, voice mail and features such as speed dial.

Call center operations are a primary beneficiary. Anyone anywhere on the enterprise network, including remote individuals attached via the Internet, can become part of a virtual call center that works off a single database of customer and product information. Call center managers will be able to create databases of incoming calls and at the end of the day send the five worst calls to the product managers, for example.

"That's the whole ball of convergence wax — the ability to do things you couldn't formerly do cost-effectively," says Don Hausman, product manager for 3Com's voice solutions group in Andover, Mass. 3Com's NBX 100, acquired through a merger with NBX this spring, is helping define a new class of network server that functions as an IP-based PBX.

3Com, like NBX before it, has concentrated on providing a complete plug-and-play voice and data product to small offices that don't have resident IT staffs. While the target has been small businesses, large enterprises are starting to adopt iPBXs for branch offices.

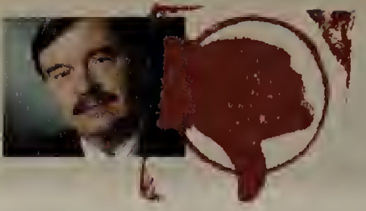
Cisco has a competing product, acquired through its merger with Selsius Systems in October 1998. The system, aimed more at the enterprise than 3Com's NBX 100, is assembled from components that include CallManager call-routing software for Windows NT; two models of IP phones; and assorted gateway interface cards and routers needed for WAN connections. Cisco is now targeting smaller businesses with Media Convergence Server, a bundled version preinstalled in a server.

Cisco stays away from the iPBX label. "That's like calling automobiles horseless carriages," Renaud says. Convergence is moving voice onto data networks, and "iPBX" implies the opposite, he explains.

Vertical Networks, a start-up in Sunnyvale, Calif., is challenging the two data communications giants. It offers a more completely integrated box, called InstantOffice, that incorporates hub and router functions as well as IP telephony. However, Vertical doesn't deliver voice over IP to the desktop. Instead, it uses two wires — one to the PC and one to a traditional phone — from its box, says Reed Henry, Vertical co-founder and vice president of marketing.

That approach is fine with Laptop Lane, which is using InstantOffice to provision T-1 lines to the business centers it's creating in major domestic airports.

"We could set up these centers without convergence, but we'd have to charge customers more and we'd make less," says Bruce Merrell, president and CEO of Laptop Lane.



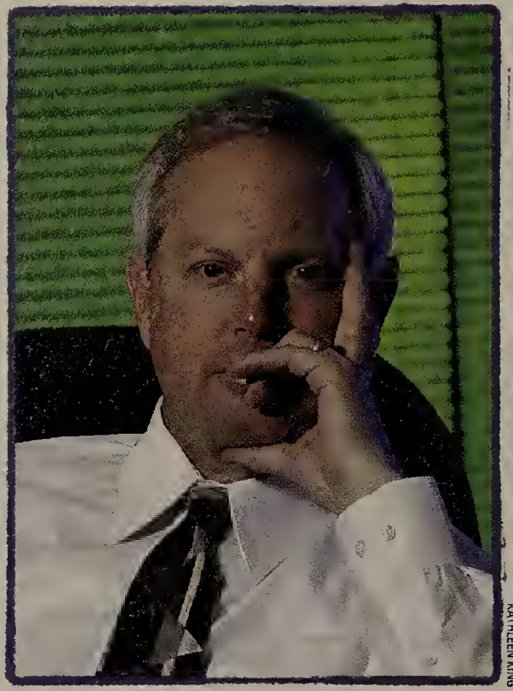
COLUMNIST'S CALL. "Buyer interest in voice over LAN is feature-driven, not 'convergence-driven,' so open feature architectures are needed to validate this concept. So far, nobody has one. Wait a while. Cisco's 'Give up your PBXs, you huddled masses!' is stupid." — Thomas Nolle, "Reality Check" columnist

Moore's Law marches on

In their crafting of more fully integrated wares, iPBX developers are benefiting from faster and less expensive processors, better coder/decoders, single-chip Display Systems Protocols and standards stabilization.

"There's been more combination of previously stand-alone devices — router, hub, switch, PBX, DSU/CSU — into a single platform," says Tom Jenkins, a senior consultant with TeleChoice in Owasso, Okla. You don't get best of breed, but the integrated device is more reliable and easier to manage. Jenkins also sees more interoperability, due primarily to partnerships among equipment vendors.

The initial wave of iPBX platforms — including Lucent's first iPBX, scheduled for release before year-end — is aimed at small offices with less than 100 users. Several of the traditional voice PBX manufacturers have scheduled enterprise-class iPBX systems for release in 2001, and Nortel Networks has promised one by mid-2000.



KATHLEEN KING

Laptop Lane CEO Bruce Merrell says the ability to converge voice and data has cut operational costs at his company's airport business centers.

Evolution vs. revolution

The question is, just how complete and scalable will any first-generation enterprise iPBX be?

Traditional PBXs have hundreds or even thousands of call-control features that have to be migrated from the highly disciplined and connection-oriented voice world to the anarchic and connectionless environment of data communications. How do you place a call on hold when it is just a bunch of packets that are mixed in with a lot of other packets?

Lucent expects traditional PBXs to host a lot of these call-control functions as iPBXs are adopted to support advanced applications that integrate voice and data.

"Most IP PBX vendors haven't even thought about doing things like call-detail recording or time-of-day routing," says Karyn Mashima, chief technology officer and vice president of strategy for Lucent's business communications group. "And scalability is always very hard to do in data networks, while voice PBXs are proven to scale to tens of thousands."

Lucent is adding IP trunks and features to its Definity voice switches so they can act as central servers and continue to handle much of the call control. Central and remote PBXs can communicate via IP, eliminating the need for costly T-1 lines. "Within a few months, we will be able to support IP phones off Definity," Mashima says.

Customers get a lot of the benefits of convergence while avoiding a forklift upgrade and retaining the traditional PBX's reliability and scalability. Of course, this approach leaves separate voice and data networks running to the desktop, supported by two different types of switches that have to be maintained and managed.

Donald Riley, chief information officer at the University of Maryland (UM) in College Park, doesn't mind that approach. It has about 120 users experimenting with Lucent's IP-enabled Definity switch and MMCX multimedia platform, as well as Cisco IP phones and 3Com wireless-IP Palms.

"What we don't understand yet is the scalability issues," Riley says. "We have 32,000 students and 10,000-plus faculty and staff, and we're not far enough into it to know if [the technology] will scale up to that level. A whole food chain has to buy into this IP telephony to make it work end to end."

Start small

Convergence may not be ready for prime time on a large scale, but you shouldn't ignore it.

"You have to start looking at it now," says David Dines, a senior analyst with Aberdeen Group, a market research firm in Boston. "Take a small branch office with an old phone system and turn it into a pilot site. Use the site to try to solve a business problem that you can't resolve cost-effectively with the old system, like using skills-based routing to send customers to the best available person in a distributed call center. See how it works and impacts the network."

Companies should also look for "green-field" opportunities. One such example would be when a branch operation is being moved into new construction office space that has no voice or data network.

"Now that the traditional PBX companies are getting into this business, there is no problem finding a reliable supplier," says Jack Chase, director of enterprise products for Natural Microsystems, a Framingham, Mass., company that makes boards and software used in convergence products.

But make sure the equipment supports downloadable upgrades so you can accommodate new or evolving standards. The LAN side reached a watershed this past year with the ratification of the IEEE 802.1p and 802.1Q standards for QoS, and the list of products that support the International Telecommunication Union's H.323 specification continues to grow.

But H.323 was originally designed to deliver video over a single LAN and does not scale to enterprise or carrier backbones well. A better bet for a general call-

Continued on page 54

Convergence divergence

ARE VOICE AND DATA VENDORS BUYING INTO THE BUZZ FOR THEIR OWN CORPORATE USE?

Network equipment vendors have begun dishing up quite a repast of convergence products, but they are really only nibbling at it themselves. Before they take the big bite, it seems, most network vendors are waiting for enterprise-class Internet-based PBXs to emerge and for existing PBXs to depreciate.

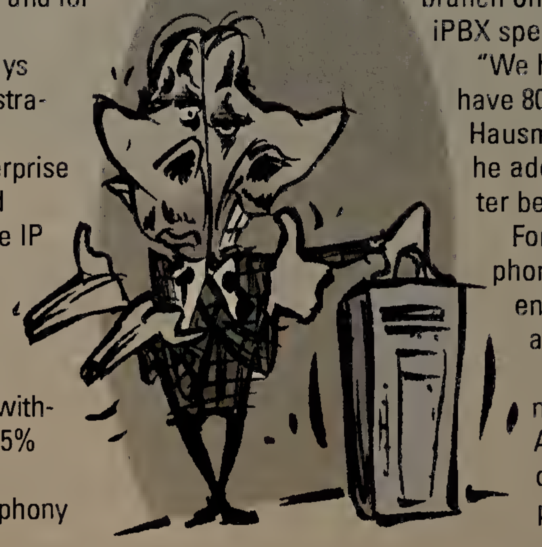
"We are constrained the same way our customers are," says Karyn Mashima, chief technical officer and vice president of strategy for Lucent's business communications systems group.

Lucent is implementing convergence selectively on its enterprise backbone to contain costs, create distributed call centers and facilitate catalog operations. But it has not deployed any of the IP phone and iPBX products it has scheduled for release later this year.

Desktop users still have traditional phones, but most of them — 98% by year-end — will have access to an IP-telephony gateway that will let them send voice mail and faxes without making a long-distance call. The company anticipates a 5% reduction in voice costs.

Mitel, the first major PBX vendor to endorse IP-based telephony openly, announced its "voice-LAN" strategy four years ago. But like Lucent, the Kanata, Ont., company is not yet using a converged network on the LAN side. However, Mitel will be the primary alpha site for its first IP telephony products, which include a line of IP phones scheduled for release in the first quarter of 2000. An enterprise-class iPBX will follow about a year later.

Nortel, which expects to bring an enterprise-class iPBX to market by mid-2000, shipped its Integrated IP Trunk Gateway this April. It plugs into Nortel's traditional PBXes, and all the intracompany calls coming from the 1,000 employees at the development site in Santa Clara, Calif., go through it.



Traditional data vendors, on the other hand, are embracing IP phones and LAN-based telephony enthusiastically. For one, 3Com is converting branch offices to converged networks in the wake of its acquisition of iPBX specialist NBX last March.

"We have 25 3Com offices living on our NBX 100 system, and we have 800 customers using it at a total of 12,000 nodes," says Don Hausman, product manager of 3Com's voice solutions group. But, he adds, replacement of enterprise-level PBXes is a different matter because they "have a book value of five years."

For its part, Cisco has some 2,000 of its 20,657 employees on IP phones and expects to increase this number to 3,000 by year-end. Some sites have nothing but a converged net for voice and data.

"Our entire San Jose campus [9,945 employees] will be running on IP telephony by the end of 2000," says Peter Alexander, vice president of marketing at Cisco. As a measure of its confidence in the technology, Cisco converted its vice presidents and customer briefing centers first.

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Continued from page 52

control standard is the Megaco/H.248 specification being worked on jointly by the IETF and ITU. Developers have not scheduled a completion date for Megaco; nonetheless, Megaco does appear to be supplanting the IETF's proposed Media Gateway Control Protocol standard.

Anyone looking to converge large voice and data networks also should ensure that the equipment they buy can be upgraded to support Session Initiation Protocol, a proposed IETF call-signaling standard.

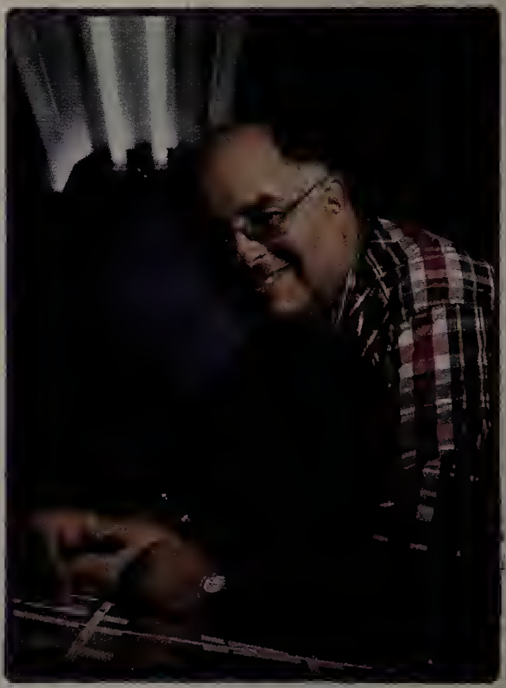
Soft savings

Don't expect the iPBXs to cost less than the traditional devices they are replacing. While analysts expect the prices to drop dramatically over the next year, you may pay a bit of a premium today. For example, one user says he spent about 15% more when he decided to go with 3Com's NBX 100 instead of a Toshiba key system.

"Upfront cost wasn't the issue," says Barry Beyer, president of Disbrow Manufacturing, a producer of paperboard boxes in East Orange, N.J. He was looking for additional features, such as caller-selectable call-forwarding options and better caller-ID integration with his company's accounting system. Since March, Disbrow has been based on a converged network that uses Ethernet to deliver data and voice services to the company's 18 employees.

"The voice quality is better than what we had before," says Beyer, who was replacing a Comdial key system. "Also, upgrades are free and can be downloaded, so I expect this platform to last a lot longer than any traditional phone system."

By consolidating administration and management, converged networks reduce operational costs, and they also make it a lot less expensive to move phones when employees change offices. Moving a regular phone attached to a traditional PBX is labor-intensive and expensive — it costs $250 on average.


STEVE SKOLL

Barry Beyer, president of Disbrow Manufacturing, picked 3Com's NBX 100 IP-based PBX to deliver voice and data services to employees on a LAN.

In contrast, IP phones declare themselves using their Ethernet media access control addresses — whenever and wherever they are plugged in to the network. And because the same jack is used for voice or data, network administrators don't have to tag and keep track of different types of outlets.

On the negative side, the prices of IP phones currently start at $350 to $400, while the least expensive traditional phones are in the $100 range. Also, IP phones will double the number of IP addresses that an enterprise is using, and they are subject to Ethernet distance limitations.

"That last 100 feet to the desktop is going to be the hardest to change," says William MacDonald, vice president of business development for Calista, an IP telephony start-up in San Jose recently bought by Cisco. To ease migration,

Continued on page 56

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Continued from page 54

Calista has come up with an interim solution: IP-based PBX extenders that IP-enable traditional digital PBXs and their telephones and turn remotely located phones into virtual extensions.

Calista reseller KLF, a telecom interconnect supplier in Ft. Wayne, Ind., is using the PBX extenders to set up virtual call centers for customers. Using a single ISDN line, KLF can provision a call center agent's home office with a phone connection, Internet link and dedicated fax line. Calls can be routed to the agent's phone just as if the phone were sitting on a desktop at the corporate site.

Five nines or bust

Reliability is a major concern as voice gets moved onto data networks, although part of this is the natural uncertainty that accompanies any paradigm shift.

But one clear danger posed by convergence is the loss of the redundancy that two separate networks provide. People who design voice switches think of downtime in terms of seconds per year because the networks have to be up at least 99.999% of the time.

In contrast, the most highly available routers on data networks today have average annual downtimes measured in minutes, or even hours. While the connectivity demands of the Internet economy are rapidly reducing the tolerance of such outages on the data side, there is still a huge difference between the voice and data requirements.

WALTER CALAHAN

Donald Riley, CIO at the University of Maryland, has about 120 users experimenting with Lucent's IP-enabled Definity switch and MMCX multimedia platform, Cisco's IP phones and 3Com's wireless-IP Palm devices.

This gap must be closed because it is clear that users aren't willing to sacrifice any reliability on the voice side. When asked if they'd settle for four nines — 99.99% uptime — on a converged voice/data network that provided a lot more features and capabilities for a lot less money, the answer was a resounding and almost unanimous, "No."

"There's no reason that we can't achieve the same level of reliability in the data world, but we will never get there if we have to keep putting all these resources into evolving a separate voice network," UM's Riley says. "If we try to keep these parallel investments going much longer, the underdeveloped world could leapfrog us to convergence."

Breidenbach is a freelance technology journalist and consultant. She can be reached at sbreide@aol.com.

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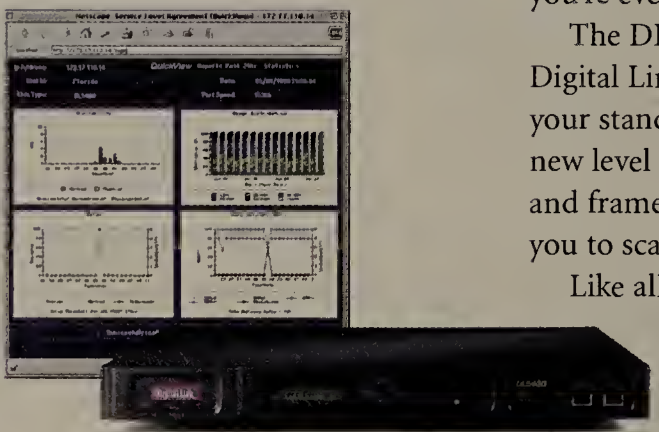

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THE METAFIX

IS THE METADIRECTORY THE TRUE ENTERPRISE SAVIOR?

By John Fontana

Over the years, the enterprise directory has created a louder buzz than a low-flying biplane. The promise of such a directory has repeatedly swooped down to near realization only to shoot back up over the enterprise landscape and disappear.

The metadirectory promise has been to reduce user administration and create a single point of access to security services, applications and resources. With the advent of the Web, electronic commerce and other browser-based applications, everyone is even more anxious for the ultimate directory to land.

While the approach has changed, it remains clear that with the directory as a focal point, administrative costs decline while the ability for sophisticated internetworking increases. So why isn't directory deployment happening on a large scale? Because conceiving a flight plan isn't easy.

Establishing a directory infrastructure involves not only choosing a standard technology but also a whole lot of political machinations. Management must be persuaded that such a project has enough merit to be worth absorbing millions in costs. Individual departments must join in an effort that appears to lessen their power over their own data.

The proliferation of legacy directories also hinders the creation of the enterprise directory. Companies must retrofit legacy data into a directory infrastructure. Moreover, standards are still under work, although vendor consortiums are springing up to accelerate the adoption of the standards.

The reality is, for the majority of companies, the enterprise directory is a long way off — despite its long standing as a buzzword.

Too much of a good thing

The big issue for most is directory bloat. Applications, network operating systems and departments have their own directories. Unification isn't easy.

"I worked with one company that was running 600 Novell Directory Service directories that were not interconnected," says Alexis Bor, president of Directory Works, a directory consultancy in Celebration, Fla.

Six hundred may be more than the norm, but that figure speaks to the enormity of the problem. Forrester Research, a market research firm in Cambridge, Mass., says the average corporation has some 180 separate directories. The Burton Group in Midvale, Utah, puts the number somewhere above 100.

Integration, however, is not undertaken just to decrease the number of directories. It also means a reduction in time-consuming changes.

With a unified directory, for example, a net administrator would no longer have to change a user's name in the human resources system, and then in the e-mail system, and then across a host of applications.

"My big costs are people costs. If they have to touch the data more than once, it gets expensive,"

COLUMNIST'S CALL. **"The key to success here will be work-saving features in establishing and maintaining directories. Most users won't be able to justify the effort most products require."**
— Thomas Nolle, "Reality Check" columnist

says Don Bowen, a directory architect for a large Midwestern heavy equipment manufacturer.

Bowen has already tied together his directories for human resources, phone, e-mail and security with a metadirectory hub. This hub lets each directory remain an authoritative source while contributing data to overall user identification. "We have a hub, but not enough spokes yet to make our wheel stable," he says.

Bowen says net executives must ignore tales of directory bliss and just try each day to move toward consolidation and ease of administration. "If users don't do that, the directory buzzwords and promises for the future are just that," he warns.

Progress toward the enterprise directory also is being aided by standards-based technologies, such as the Lightweight Directory Access Protocol (LDAP), XML and the Directory-Enabled Networks (DEN) effort.

Lightweight problems

LDAP has brought the most awareness to directory interoperability. Nearly three years ago, Netscape and 40 other companies backed the specification with the goal of creating a standard protocol for directory access. That effort created momentum, but it wasn't the end-all.

LDAP doesn't address issues such as replication, synchronization and access control lists — features that are key for keeping directory data current and out of the wrong hands, says Todd Chipman, an analyst with Giga Information Group, a market research firm in Norwell, Mass. The Internet Engineering Task Force is working on standardizing those mechanisms.

Chipman says another problem is that vendors have extended LDAP's schema and created interoperability issues.

ALAN KLEHR

Don Bowen, directory architect for a heavy-equipment manufacturer, extols the virtues of the metadirectory he's built but says his integration work is far from done.

Fortunately, in July the Directory Interoperability Forum set out to rectify the interoperablility woes. The forum, made up of IBM, Novell, Oracle and 31 other companies, seeks to accelerate the work on LDAP and other standards. It will create a set of APIs to help developers integrate the directory with applications. Unfortunately, Microsoft and Netscape are absent, and that absence may limit the forum's effectiveness.

But IBM, Microsoft, Netscape, Novell, Oracle and others have agreed on the emerging Directory Services Markup Language, an XML extension expected to create a standard way for directories to tell each other what data they hold. Work has just begun, however.

Another piece of the directory puzzle is the DEN initiative, but parts of that specification are still being ratified, and interoperability could be more than a year off. (See story, page 60.)

Super directory

The newest buzz, however, is over the metadirectory. The metadirectory — middleware for centralizing control over a host of distributed directories — is good buzz for IT professionals. It shows that vendors are finally starting to realize that help is needed to overcome directory bloat, and that such help must come through linking existing directories, not consolidating them into one magical directory. True, vendors haven't exactly stopped pitching their own directories as the master to which users should port all existing data. But support of the metadirectory from heavy hitters is movement in the right direction.

For example, Microsoft recently bought leading metadirectory vendor Zoomit. Meanwhile, Novell plans to begin fall beta tests of DirXML, its metadirectory technology; Netscape has incorporated metadirectory technology from Isocor into its Directory Server; and IBM has developed metadirectory technology for its SecureWay product.

"The metadirectory is the key to tying existing directories under one umbrella" for such things as single administrative interface or consistent user access to multiple directories, says Harold Albrecht, chairman of the Network Applications Consortium (NAC), a group of end-user companies. "The directory market started to really move with LDAP, and now we're getting the masses to line up behind the metadirectory concept."

A metadirectory, however, is not a nonstop flight to nirvana. It is just a tool, and a new tool at that. The metadirectory is not plug and play; IT organizations must do a lot of customization work. Equally important, IT must analyze internal issues, develop a goal and tailor its directory work toward that goal.

Get going

The possibilities of the enterprise directory are well-known to the net executive, but finding a starting place is a major hurdle. IT executives must work backward, pick through what they have and meld it into an architecture they create on the fly. That can be a Herculean task. Determination is mandatory.

"You have to live, eat and breathe this stuff. You have to be a champion for it to get it started," says Don Johnson, director of advanced technology research for the state of New Jersey.

One good place to start is your next extranet, users are finding. Johnson did just that, starting from scratch to set up an extranet based on a standardized directory to link New Jersey's 21 counties.

"If I hadn't started this, we may have ended up with 21 architectures in 21 counties, and that was a risk I couldn't take," he says.

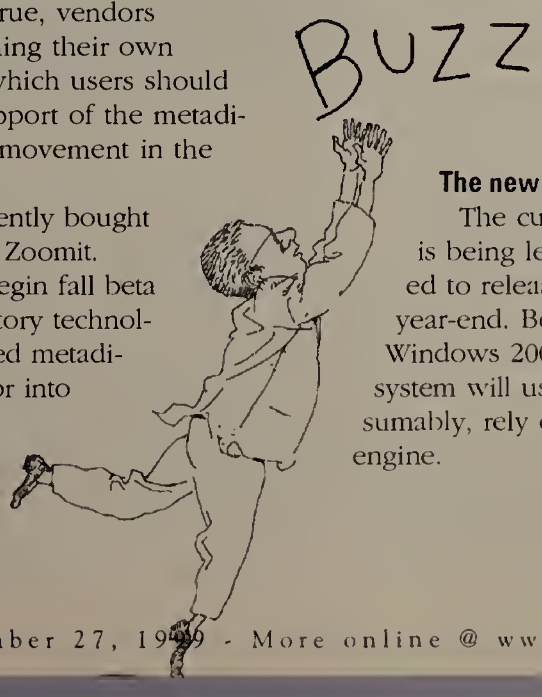
Because the state can't afford a private network, the goal is to link New Jersey with its suppliers, contractors and the public over the Internet. The state's E-Link program began with a pilot in 1997, and it now has limited functionality throughout four counties.

Johnson, who describes himself as a newbie with directory technology, is surprised when he talks to his peers.

"I don't think most people have really started building an enterprise directory," he says. "Given the promises of the directory, I thought most users would be farther along." But he says even vendors eagerly ask him about directories.

The new platform

The current enterprise directory revival is being led by Microsoft, which is expected to release its Active Directory before year-end. Because Active Directory is key to Windows 2000, those who use the operating system will use the directory and then, presumably, rely on Zoomit as their metadirectory engine.



COLUMNIST'S CALL. "Directory-enabled networking and the rest of Common Information Model will go a long way toward easing the network manager's burden — but only with a reasonable, efficient implementation. DEN is important, but your choice of directory service is even more so." — Dave Kearns, "Wired Windows" columnist

But other vendors are feeding the buzz by repositioning or revamping their directories for more uses.

Novell has refocused around its Novell Directory Service (NDS) and this fall will release stand-alone versions that run on operating systems other than NetWare. The company is trying desperately to weave its highly acclaimed NDS into the e-commerce market. Netscape, now a division of America Online, and Sun are integrating Netscape's LDAP-based Directory Server into Sun Solaris. And IBM is positioning its SecureWay directory with its e-business strategy. All of which helps IT executives focus on the technology and begin to understand the capabilities of the enterprise directory.

Now add in a host of application vendors, such as Oracle, PeopleSoft and SAP, that are directory-enabling their applications. E-mail vendors added LDAP more than a year ago. Others, such as Aventail, Bowstreet Software, Netegrity and Oblix, are building applications on top of the directory, which some are calling the development platform of the future.

"The directory not only can manage fixed assets like users and applications, it can start to manage your business," says Andrew Roberts, chief technology officer for Bowstreet in Portsmouth, N.H. This month, the company will release its directory-enabled architecture for Internet channel sales management. "The directory has traditionally been tied to cost reductions, but now it can generate revenue."

True to form, directories continue to make a lot of racket.

"There is a lot of buzz around the metadirectory, integration technologies and tools, and the enterprise should focus on it all for creating the enterprise directory," says Gary Rowe, a Burton Group analyst. "It will happen in stages for most because what they have now internally is typically a mess."

The prevailing wisdom is that the mess will get straightened up and that the enterprise directory is inevitable. If only we knew when.

The discomfort of DEN

VENDOR PERMUTATIONS COULD DOOM DIRECTORY-ENABLED NETWORKS.

Back in 1997, Microsoft and Cisco envisioned integrating directory services and network hardware as a way to build intelligent networks.

The pair dubbed the vision Directory-Enabled Networks (DEN), collected an industry Who's Who of support and set out to build brains into the hardware brawn that wires every corporate network.

Those brains, they said, would deliver better network performance, management, security, reliability and quality of service (QoS). Users and applications would be handed graded levels of service on switches and routers, based on a set of policies stored in a directory.

But by 1999 the vision has grown fuzzy.

Cisco and Microsoft handed off DEN to an independent standards body, the Distributed Management Task Force (DMTF), in September 1998. But as DEN progressed, vendors got ahead of the standards work by extending DEN to meet their own requirements. This has led to bewilderment and products that don't interoperate.

The DMTF rewrote the specification and wisely added it to Common Information Model (CIM), a framework that enables the integration of management systems. But the damage from DEN's early days still blackens the standard's reputation.

Those who are not confused are simply unaware, which may be even more deadly to DEN's future.

DEN — what's that?

Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J., says there is such little knowledge about DEN among end users that his company cannot achieve enough of a statistical sample to generate a survey. "Development of DEN, like work in the ATM Forum, will only show users that the technology is too complex to deploy," he says.

Others agree that understanding is lacking.

"IT is still trying to get a hold on DEN," says Dave Kosiur, an analyst with The Burton Group in Midvale, Utah. "The bottom line is that for someone who needs DEN throughout the enterprise, it is not ready."

Work continues, however, and this fall a significant milestone is expected when the DMTF releases the policy model for DEN as part of CIM Version 2.3.

CIM 2.3 includes the DEN policy model, which is the final of three models comprising the specification. The policy model defines the rules and policies used to implement QoS. It balances the other two DEN models: physical and logical. The physical model represents pieces of the network that can be labeled, such as chassis, line cards and cables. The logical model defines things such as IP addresses for interface ports, protocols and subnets.

"DEN has gone from development to done in roughly 18 months," says Ray Bell, director of engineering for Cisco and one of the creators of the DEN specification. "Now it's up to vendor implementation."

Bell says Cisco is now in pilot with four large service providers that are building DEN systems for deployment in the fall. Cisco also has ported Microsoft's Active Directory to Unix for use with Cisco Networking Services to create a DEN architecture.

Disaster in the making?

But if vendor implementation follows its current pattern, it could be chaos for the enterprise.

Major hardware vendors, including 3Com, Cabletron, Cisco, Lucent and Nortel Networks, have grabbed onto the DEN acronym, but their "DEN-compliant products" don't interoperate.

"There is a sea full of directory islands out there," says John McConnell, president of McConnell Associates, a consultancy in Boulder, Colo. "You have one directory for 3Com and another for Cisco. Hopefully, CIM 2.3 will help to integrate these point solutions."

Users are left asking how network resources can be provisioned, as DEN proposes, without interoperability over a host of vendor products. DEN can't reach its promise unless an agreement is reached on the specification and interoperable components are delivered. Neither thing exists, but the former is closer to reality than the latter.

"The vendors have gotten way ahead of the standards work," says Charles Muirhead, president of Orchestream, a DMTF member that develops a policy-based server for the enterprise. "The DEN concept is solid, but relying on the directory or DEN to deliver multivendor policy-based networking is a high risk right now."

Orchestream, Hewlett-Packard and Ukiah Software, which Novell recently bought, are trying to lessen the risk.The three vendors have policy servers that act as middleware to tie together hardware devices from multiple vendors.

But even those devices carry the same surprise for network executives as DEN — the need to write policies for network resources. The job is a complex task for any size enterprise.

"It's not like IT guys have experience with the concept of creating policies. They're starting from scratch," Kosiur says.

Some say DEN is doomed from the start. Nolle is even moved to quote Shakespeare's Macbeth when he thinks about DEN: "It is a tale told by an idiot, full of sound and fury, signifying nothing."

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COLUMNIST'S CALL. **"A VPN is a double-edged sword. The envelope that creates the tunnel and the processing required for encryption and decryption can add latency to your network. So be aware of the price you pay for potentially reduced throughput and added network delay."** — Kevin Tolly, "Internetworking Monitor" columnist

THE VAUNTED VPN

VIRTUAL PRIVATE NETWORKS FALL SHORT OF THEIR EXALTED REPUTATIONS.

By Tim Greene

IP virtual private networks are your answer to any number of problems: expensive remote access, complex WANs and insecure links between you and your business partners, right?

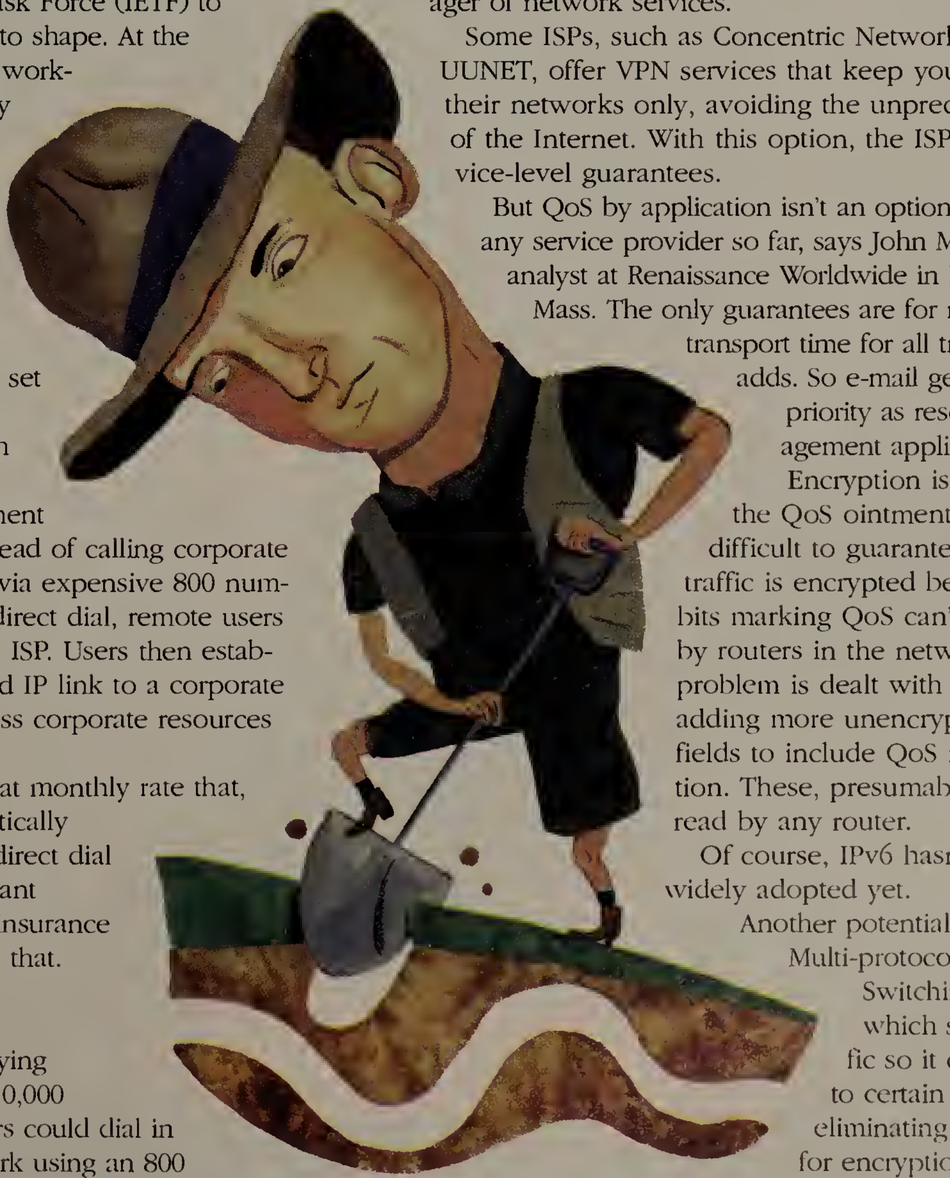
Maybe someday. VPNs are maturing rapidly, but they still can't do everything people say they can.

What a VPN can do today is replace dial-up remote access and save you money — maybe even big money, depending on the size of your operation. But it will take better quality-of-service (QoS) tools before VPNs can truly replace your data WAN. And interoperability among vendors' VPN gear will be needed before granting trusted outsiders secure access to your network becomes painless.

All that is coming, with lots of work going on in the Internet Engineering Task Force (IETF) to whip VPN standards into shape. At the same time, carriers are working to find the best way to guarantee QoS so they can offer service-level agreements that ensure key traffic gets priority handling.

An IP VPN — for which secure links are set up among sites over a public IP network such as the Internet — fits naturally as a replacement for remote access. Instead of calling corporate remote access servers via expensive 800 numbers or long-distance direct dial, remote users place a local call to an ISP. Users then establish a secure, encrypted IP link to a corporate tunnel server and access corporate resources over the 'Net.

The ISP charges a flat monthly rate that, for many users, dramatically undercuts the cost of direct dial for remote access. Reliant General, a San Diego insurance company, can attest to that.



Reassuring figures

Reliant had been paying between $8,000 and $10,000 monthly so just 10 users could dial in to the corporate network using an 800 number. The company decided to invest about $20,000 to install a T-1 to the Internet and to buy a VPN server and remote client software from Axent Technologies, says Carey White, director of MIS at Reliant. Now monthly costs are $2,500, and the number of remote users has increased to more than 100.

"The VPN is pretty solid. We have people on for six or eight hours at a time with no problem at all," White says.

VPNs are also great for connecting major corporate sites if you are willing to put up with uncertain service quality. At IT services firm Keane, the savings associated with replacing a T-1 with a VPN more than compensate for the delay incurred on the Internet link. The Boston firm saves $9,000 monthly because it replaced a T-1 to London with a VPN tunnel created using Indus River gear, says Rue Moody, Keane's manager of network services.

Some ISPs, such as Concentric Network and UUNET, offer VPN services that keep your traffic on their networks only, avoiding the unpredictability of the Internet. With this option, the ISPs offer service-level guarantees.

But QoS by application isn't an option offered by any service provider so far, says John Morency, an analyst at Renaissance Worldwide in Bedford, Mass. The only guarantees are for network transport time for all traffic, he adds. So e-mail gets the same priority as resource management applications.

Encryption is the fly in the QoS ointment. QoS is difficult to guarantee when traffic is encrypted because the bits marking QoS can't be read by routers in the network. The problem is dealt with in IPv6 by adding more unencrypted header fields to include QoS information. These, presumably, can be read by any router.

Of course, IPv6 hasn't been widely adopted yet.

Another potential solution is Multi-protocol Label Switching (MPLS), which secures traffic so it can go only to certain sites, thus eliminating the need for encryption. But again, this Layer 3 switching technology is not widely adopted in carrier networks. And the IETF's work on MPLS is not complete, although that hasn't stopped vendors from implementing MPLS and then extending it in their own ways — a nearly foolproof way to take a standard and remove vendor interoperability.

Continued on page 68

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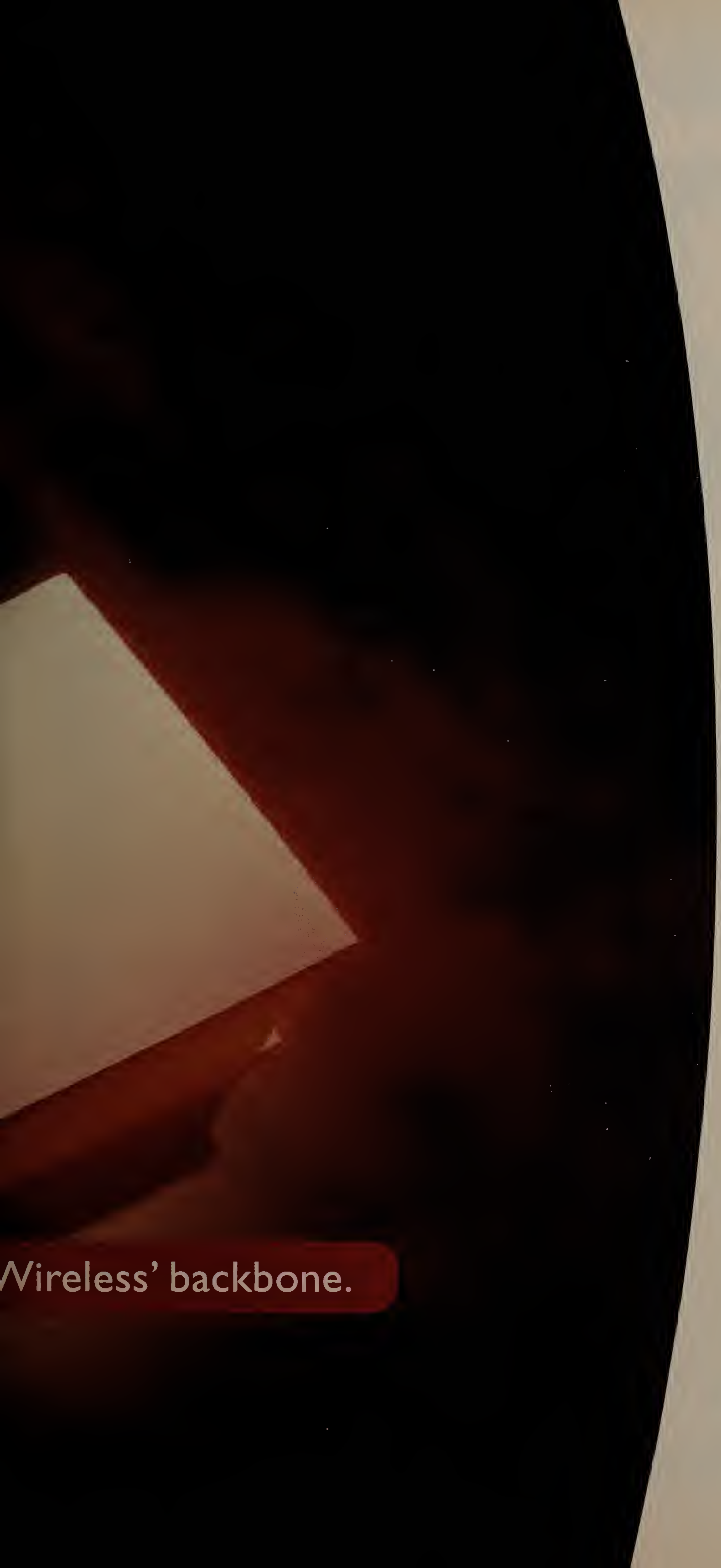

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COLUMNIST'S CALL. **"I predict VPNs will go away as soon as corporations realize that application-level security is more secure than firewall-to-firewall tunnels and QoS becomes less of an issue with higher capacity and QoS-enabled ISPs."**
— Scott Bradner, " 'Net Insider" columnist

Continued from page 65

MPLS won't be a method to implement QoS on VPNs anytime soon.

The good and the bad

Without the ability to minimize delay and guarantee throughput, VPNs will be limited to handling low-priority enterprise traffic, says Eric Zines, an analyst with TeleChoice, a telecom consultancy in Owasso, Okla. "The tools haven't been deployed yet for VPNs to compete as mission-critical transport," he says.

Still, site-to-site VPNs are fast to set up, and that holds certain appeal. Software vendor Platinum Technology International, for example, has temporarily linked about 10 acquired companies to its network via a VPN. That's much better than waiting a month until frame relay circuits can be set up, says Chuck Horvat, manager of enterprise data communications at the company, which itself was recently acquired by Computer Associates.

"We are able to connect in a very short time using VPN equipment, so we can share Lotus Notes, e-mail servers and intranet Web servers with new acquisitions," he says.

It is a bit troublesome to set up a VPN that ties together major corporate sites, even though the concept is simple. In theory, you put a VPN encryption box at each site and off you go. And extranet VPNs — secure links with business partners that you want to grant access to certain network resources — are especially challenging to set up.

Both schemes are problematic because using the developing IP Security (IPSec) standard to encrypt data traveling between sites requires that partners share encryption keys with one another. Because of interoperability problems between vendors' gear, tools that use the Internet Key Exchange (IKE) authentication protocol spelled out in IPSec (specifically, in IETF's RFC-2409) generally don't work well unless you use equipment at each node that is made by the same company.

That is a plausible fix for a VPN intranet in which you have control over the entire purchasing decision. But getting your business partners to install the same-make gear is daunting for financial, logistical and political reasons.

JEFF SCIORTINO

Chuck Horvat, manager of enterprise data communications at Platinum, likes VPNs because they allow the company to bring new employees on net quickly.

Another choice is to exchange keys offline. But that's cumbersome and not as secure because it forfeits niceties such as the ability to choose an encryption algorithm on the fly — a feature IKE defines. Other IKE add-ons include support for certificates and token cards.

Makers of VPN gear recognize the key exchange problem and are working on it. Most participate regularly in interoperability bake-offs.

"I expect to see by the end of the year that most people will attack the public-key infrastructure problem," says Chris Liljenstolpe, who worked on VPN interoperability tests at NetWorld+Interop '99 in Las Vegas and is lead engineer for global networking at Cable & Wireless.

Of course, interoperability is key not only for setting up extranet VPNs but also for avoiding dependence on one vendor. Jim Logan, security specialist for the state of Kansas, found that a handy factor.

Kansas agencies are large enough to purchase their own VPN gear, but some agencies still need to talk to one another. "If all our devices stay IPSec-compliant, we should be able to communicate with one another. We kind of hate to be dependent on any single vendor for any equipment," he says.

IPSec is a good VPN standards package, Logan says, "as long as you qualify it with 'on paper.' The reality of it may be different."

Management challenges

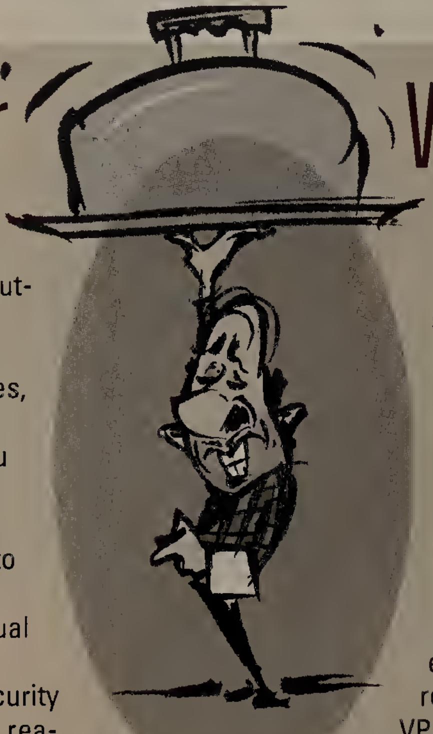
Beyond the major nuts and bolts of VPNs, vendors are still working out the bells and whistles.

Distributing VPN clients and keeping them on the same software release is a challenge in VPNs with thousands of remote access users. Many vendors are embracing remote download of clients while they await Windows 2000 clients that Microsoft says will support IPSec.

Management of VPNs is also a challenge. Keeping thousands of encrypted sessions alive and repeatedly changing encryption keys to ensure security is a problem with which vendors and standards makers are still grappling. The IETF recognizes that under IPSec, VPN devices have no quick way of knowing when sessions they have established with other devices have failed. While the IETF has several proposals before it, the standards body has not yet taken up any of them.

VPNs have a way to go yet, but it is clear they provide some value today. If you begin on a small scale using VPN applications that work for you, you can grow your knowledge of VPNs as the technology matures. When it is ready for more sophisticated applications, you will be, too.

Service providers want your VPN business



If it sounds like setting up a virtual private network is too much trouble, you might consider outsourcing it from a service provider.

Some ISPs offer packages that connect all your sites over their wholly owned IP backbones, thereby avoiding the Internet. That option lets you skirt the uncertainty of Internet performance and gives you some recourse if the link fails.

ISPs such as AT&T, GTE Internetworking and UUNET even offer service-level agreements, although the SLAs are limited to availability, lost packets and the speed with which your traffic crosses their networks. VPN SLAs don't give priority to individual applications.

What's more, the SLAs don't provide guarantees against security breaches. Such guarantees are pretty much ruled out for legal reasons. It's too difficult to define what a security breach is and to determine what value to place on whatever losses you can identify, says Rob McKinney, director of VPN and Internet security for GTE Internetworking.

It's no doubt easier to let an ISP serve up a VPN than to build one yourself, but there is a drawback: A service provider may take security shortcuts.

If the service provider doesn't tunnel your traffic until it reaches its network, that leaves your data insecure between your sites and the carrier network, says Chris Liljenstolpe, a senior network engineer for Cable & Wireless and a member of the VPN test team at NetWorld+Interop '99 in Las Vegas.

The problem is surmountable. You could let the service provider start the tunnel at your site with a VPN server it controls. If you want to go this route, Liljenstolpe suggests setting up a demilitarized zone so the tunnel server is isolated from the corporate network by a firewall.

Labeled service

Service providers are considering VPNs that are based on Multi-protocol Label Switching (MPLS), traffic shaping technology that resides in routers. If an ISP bases its network on MPLS-aware gear, then it would not need customers that use MPLS-enabled routers to set up additional VPN equipment. MPLS virtual routers will maintain separate routing tables for each customer's VPN sites. Traffic on the VPN is directed along predetermined MPLS paths that secure traffic as well as switches.Intermedia Communications in Tampa, Fla., is one carrier that has pledged to set up VPNs using MPLS. It plans to do so by year-end.

Currently, corporations are more likely to manage their own VPNs rather than outsource them, according to research from Infonetics, a market research firm in San Jose. But by 2003, Infonetics says, the trend will shift toward outsourcing, with end users paying $10.4 billion for their own gear and $14.2 billion for managed services in that year.

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ASP ATTACK

Application Services

IT'LL TAKE ALL YOUR WITS TO PICK THE RIGHT APPLICATION SERVICE PROVIDER FOR YOUR NEEDS.

By Denise Pappalardo

Like the Big Bad Wolf in the classic children's fairy tale *Little Red Riding Hood*, a host of services providers are salivating over the opportunity presented by the young application outsourcing market. But the last thing any network executive wants is to become the foolish victim.

Believing every promise made by an application service provider (ASP) could land you in a heap of trouble down the road, so don't go into this process ignorantly. Knowing what to ask for from an ASP and how to determine if application hosting will benefit your company will keep you on the safe path.

Let's start with a definition: An ASP is a company that offers rentable applications to multiple business users from a shared data center over the Internet, an ATM, frame relay or even a private-line network. The applications are typically accessed from a user's PC in one of three ways: via a standard Web browser, a thin client or an application-specific client.

Many ASPs offer managed application and database servers, security, system backup, disaster recovery and service-level agreements (SLA). And with more than 150 companies fitting the ASP definition today, it's easy to find an array of applications for rent, from Microsoft Exchange e-mail to PeopleSoft financials.

But be aware of the fact that there is no one ASP model. Corio, a Redwood City, Calif., ASP specializing in PeopleSoft enterprise relationship management (ERM) software, offers a 99.9% application availability guarantee. But that doesn't mean you'll get the same promise from newly formed Qwest Cyber.Solutions when it rolls out its SAP and Siebel application hosting services. You'll find it difficult to compare pricing, contracts and SLAs from any of the ASPs — a circumstance that proves the market is extremely immature, says Julia Giera, an analyst at Giga Information Group in Norwell, Mass.

The market will get there in due time — and perhaps with the help of groups such as the ASP Consortium, a four-month-old industry forum created to define the market, its best practices and technologies. For today, users who want hosted services have a lot of figuring out to do on their own.

Four to live by

The biggest question any business user must answer is: What advantages will an ASP provide that I can't get in-house?

Giga offers four reasons why you would outsource an application rather than deploy servers, obtain software licenses and gear up your staff to support a new companywide deployment. They are: to improve service; obtain a strategic advantage; reduce risks by being able to move quickly with low capital investments; and reduce costs.

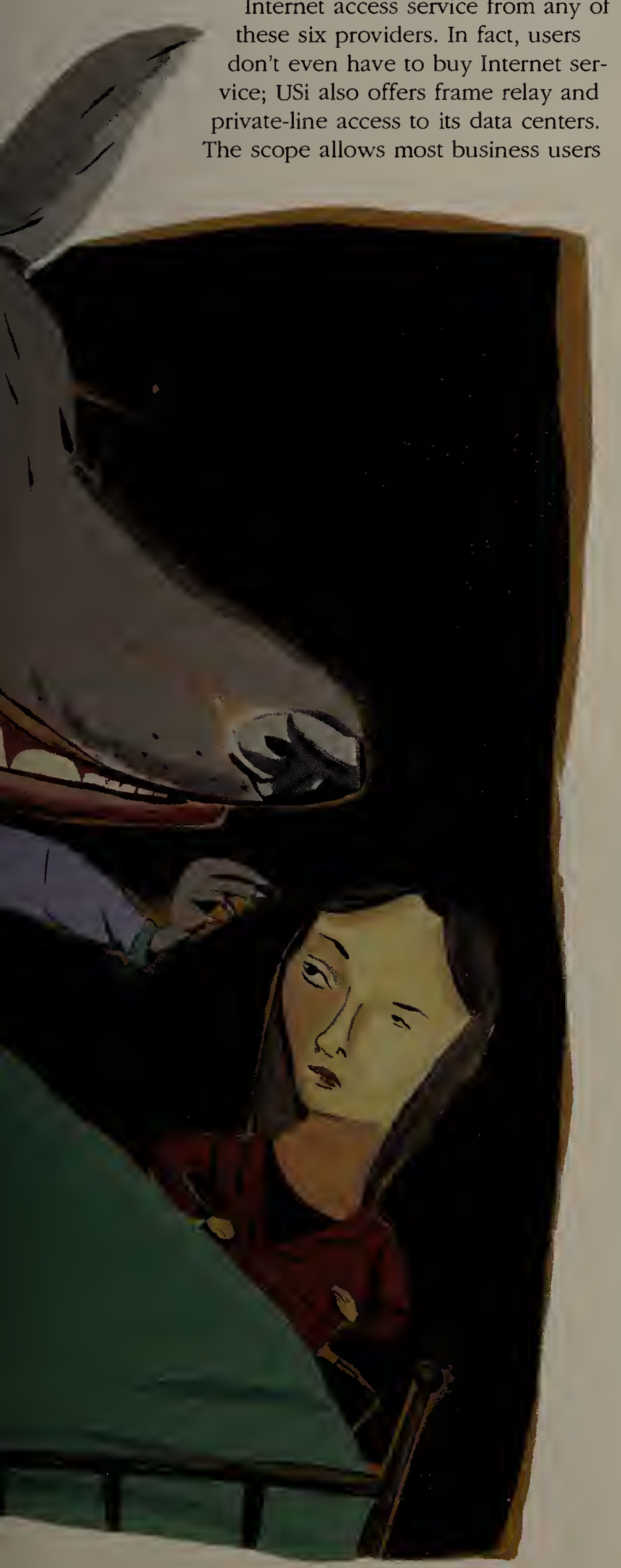
In part, improving service means getting more bandwidth than you could afford otherwise. For example, many ASPs are setting up data centers that have dedi-

COLUMNIST'S CALL. "Consider applications outsourcing as the continuum that it is, rather than the precipice it's often depicted as. Most firms outsource payroll; it's not a seismic shift to do the same with benefits management."
— Daniel Briere and Christine Heckart, "WAN Monitor" columnists

cated Internet bandwidth — oftentimes to multiple ISPs. With connections to six ISPs, Annapolis, Md.-based ASP USinternetworking serves as a good example. USi specializes in combining enterprise and customer relationship management (CRM) applications with electronic-commerce hosting and data warehousing. USi has built its own data centers — two in the U.S. and two overseas — for ultimate control.

Connections between USi's Annapolis and Milpitas, Calif., data centers and the six chosen ISPs — AGIS, Cable & Wireless, Digex, GTE Internetworking, Sprint and UUNET — operate at speeds ranging from T-3 to OC-3. Most user organizations would simply find the availability of this much bandwidth hard to match.

But users are not limited to buying dedicated Internet access service from any of these six providers. In fact, users don't even have to buy Internet service; USi also offers frame relay and private-line access to its data centers. The scope allows most business users to access either of USi's data centers quickly and reliably from anywhere.



Besides getting more bandwidth, you also want to think about staffing requirements when it comes time to evaluate whether taking the ASP route will help improve service to employees. That staffing aspect factored into Sunburst Hospitality's decision to outsource its PeopleSoft financial applications to USi.

Sunburst was left with an applications void after being spun off from Choice Hotels International less than a year ago. Choice Hotels, a former sister company, had been providing Sunburst with all of its financial applications through a managed data center manned by about 15 to 20 people, says Mark Elbaum, director of IS at Sunburst, a national hotel chain based in Silver Spring, Md.

Because Sunburst was essentially outsourcing its PeopleSoft application needs already, it wasn't a huge leap for the company to choose an ASP service. But Elbaum says USi is offering Sunburst "a lot more than we could provide internally, from a 24-7 help desk to redundancy."

About 25 Sunburst employees, each outfitted with a PeopleSoft client, access financial applications today over a private line in to USi's Annapolis data center 40 miles away. Most of the employees frequently use the general ledger, accounts payable and asset management tools that are part of the PeopleSoft financials program.

But Elbaum says he plans on providing application access to 4,000 employees, at all 87 Sunburst hotels, over the Internet by year-end. These additional employees will simply be viewing screens as opposed to running reports and processes, as the two dozen or so heavy users have been doing since January.

Staffing concern was a big factor in Elbaum's decision. "It's very hard to find talent. Anyone who knows PeopleSoft demands a high premium — some of the people with a year or two experience were commanding salaries that were completely ridiculous," he says.

A fighting chance

If the burden is on an ASP to hire necessary software experts, than that's a load off any network manager's mind. As a matter of fact, six of the seven users contacted for this story say a key reason for choosing an ASP was because they thought it wouldn't pay to bring high-end applications talent in-house. Most say that even if they could afford to hire experts in ERM and CRM applications, they don't feel confident they could retain those employees over an extended period of time.

Outsourcing also gives small to midsize companies, as well as start-ups, a shot at using top-tier applications they otherwise could never seriously consider.

For example, rather than buying and supporting a midtier CRM application, voice-over-IP start-up Clarent went right for higher end PeopleSoft financial and manufacturing applications by signing up for service last month with Corio. Clarent's headquarters, in Redwood City, is connected to Corio's data center in neighboring Santa Clara over a local T-1 private line.

"Being able to take PeopleSoft on this early is a competitive advantage because we now have the same business processes as the big guys," says David Blumhorst, director of IT at Clarent, which has 250 employees. And the company certainly needs to be concerned about competitive advantages because it's up against networking behemoths such as Lucent and Nortel Networks.

Blumhorst predicts Clarent would have outgrown an internal midtier CRM application in three to four years, based on employee growth predictions. So not only does application outsourcing put Clarent on a similar playing field as its competitors, it also eliminates risks associated with switching key business applications. At times, such application changes can lead to problems with customer billing and other business processes.

Application outsourcing also allows start-ups to keep capital investments low — not a bad idea for companies entering markets in which mergers and acquisitions are common.

Then there's that cost issue . . .

Outsourcing an application that your company will grow into instead of out of holds cost advantages as well. But to see cost savings, you've got to look at the entire picture and not just the service pricing on its own.

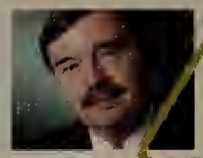
Take a look at USi's monthly rates, for example. The ASP charges anywhere from $20,000 to $200,000 for PeopleSoft financials and human resources, $25,000 for Siebel ERM, and $15,000 to $20,000 for Sagent data warehousing application hosting services. The rates vary based on the number of employees accessing the applications and the number of servers hosted and managed by USi.

At first glance, it may not appear that a business user would actually save money by outsourcing one of these applications. But in many cases, these applications require huge capital investments. If you bought ERM software directly from Siebel, for instance, you'd pay $800 to $1,350 per user license. For the software alone, USi's Siebel pricing comes out to $500 per user. Then you get to factor in savings associated with not having to buy and deploy necessary hardware and possibly dedicated bandwidth, ASP customers say. Plus, there's a definite savings by not having to hire software experts to manage and maintain the deployment.

E-commerce software developer DataSage is saving big money by outsourcing a CRM application, says John Vicidomino, vice president of worldwide sales at the Redding, Pa., company. For one, Vicidomino notes, he doesn't have to budget $75,000 annually for an application expert. For another, he didn't have to plunk down $20,000 for new server hardware.

DataSage buys the CRM application — Onyx Software's Onyx Front Office — from Eggrock Partners, a Concord, Mass.-based consulting and systems integrator that has transformed into an ASP for small to midsize companies. Besides the software itself, Eggrock provides DataSage with help desk, server monitoring and management, software upgrades and the server hardware.

DataSage also has reigned in costs by linking to Eggrock's data center via the Internet rather than the more costly frame relay or private-line alternatives. On average, you can expect to pay $2,200 per month for a dedicated T-1 frame relay port plus $1,400 per month for a committed information rate



COLUMNIST'S CALL. **"Consider applications linked to the company's Web presence first, then consider applications valuable to key employees but rarely used, like financial forecast software. . . . Outsourcing applications like SAP won't work because users won't trust them to a network outsource execution."** — Thomas Nolle, "Reality Check" columnist

of 1.544M bit/sec. Private-line services cost even more — starting at about $2,500 and scaling up based on distance of the T-1.

On the other hand, if you use UUNET or Concentric Network, it would cost you $2,495 and $1,795, respectively, for a dedicated T-1 operating at full speed. So using the Internet as your means of accessing your ASP's data center can save you anywhere from $1,105 to $1,805 per month.

. . . but cost isn't everything

Even if you can improve service, gain a strategic advantage, reduce risk and save money, the outsourcing decision isn't necessarily easy. And that's because of two concerns that haunt potential ASP users: security and performance.

Most ASPs are surprisingly unspecific about security, from product and cost perspectives, so you'll have to study each provider's security portfolio carefully. USi, for instance, offers real-time intrusion detection and firewall options, and works with each customer to determine if additional security technology, such as digital certificates, is needed. Meantime, Corio offers encryption and user and network authentication. No ASP today uses security to differentiate itself.

At a minimum, if you're accessing an ASP data center via the Internet, you should demand IP Security-compliant firewalls that can support up to 128-bit key encryption. Certain sensitive applications, such as company financials or employee records, may even warrant the use of digital certificates.

Handing over your company's sensitive financial, sales or human resources information to an ASP that will host that information on application and database servers hundreds of miles away from your headquarters is a huge responsibility. Ensuring that this information is and stays secure is another.

That's why companies such as Sunburst and BayValve Service, a Seattle company that repairs industrial valves throughout Washington state, opt for private-line access rather than the Internet. For Sunburst, the decision was a no-brainer — the company resides just 40 miles from USi's Annapolis data center, so it only incurs the cost of a local T-1. Peace of mind is worth a lot more than that, Elbaum says.

At BayValve, Office Systems Manager Nancy McKinney didn't even consider Internet access because she didn't want the company's accounting information exposed to such a wide-access arena like the public 'Net. BayValve gives employees access to an accounting software package hosted by InSynQ, an ASP in Roseville, Calif. It uses a frame relay connection into a firewall at InSynQ's site. Employees have to clear the firewall before gaining access to the Citrix server running the accounting application.

For other companies, concerns about using the Internet don't center on security, but performance. National Airlines, a start-up airline in Las Vegas, decided against outsourcing all of its applications because it's not convinced that client/server applications perform well over the Internet, says Tim Stanley, vice president of IS at the airline.

For example, Stanley decided to keep National's client/server-heavy financial application package in-house while outsourcing scores of other applications

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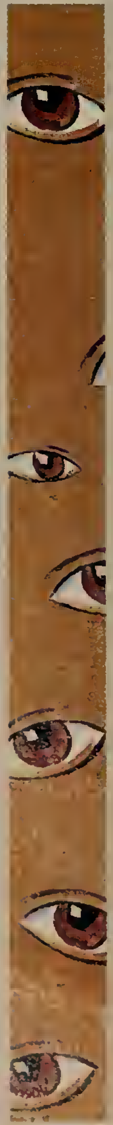
PATCHWORK QUILT OF ASPs

More than 150 companies call themselves application service providers today, but not all of them are up and running with customers and succinct service and pricing plans. Here's a sampling of what you'll find.

ASP	Examples of apps offered	No. of apps	Data centers	SLA	Monthly pricing
Breakaway Solutions	Rubric, Onyx	8	10, collocated	99.5% application availability	$200 to $2,000 per user
Corio	PeopleSoft, Octane	2	13, collocated	99.9% application availability	$395 to $795 per user
Interliant	Prevail Professional, Boomerang	10	3, own	99% application and server availability	$9.95 to $29.95 per user plus $3,000 to $5,000 for server hosting
InSynQ	Peachtree Accounting, Microsoft Office	52	2, own	97% uptime	$125 per user
Telecomputing	Microsoft Office, Intuit QuickBooks99	70	3, collocated	99.7% application and server availability*	$350 per user**
USinternetworking	Siebel, PeopleSoft	5	4, own	99.9% application availability	$500 to $1,000 per user

* Telecomputing's SLA is to each user's desktop.
** Price includes dedicated Internet access.



ASP déjà vu

RENTING APPLICATIONS IS NOT A NEW CONCEPT. WILL IT WORK THIS TIME?

If all the talk about ASPs has you feeling like you've heard the same story before, you're not crazy.

Application outsourcing has been around for nearly 30 years, even if it wasn't known as such. Does the term "service bureau" ring a bell?

The decades-old service-bureau philosophy is essentially the same as today's application service provider pitch, says Julie Giera, director of research for IT services at Giga Information Group in Norwell, Mass. In the service bureau setup, business users rented applications running the gamut from rudimentary data processing to high-end proprietary payroll. Companies such as EDS and IBM hosted the applications at centralized sites for a monthly fee; access was typically via private-line connections that maxed out at 4,800 baud.

AT&T's attempt

In an early 1990s incarnation of the service-bureau model, AT&T rolled out hosted Lotus Notes and Novell NetWare services, complete with 24-7 monitoring and management. Users typically accessed the applications over a frame relay or dedicated private line.

AT&T's Notes hosting effort flopped; the service gasped its last breath in early 1996. The carrier lacked the expertise needed to provide application-focused services and did not offer broad enough access to these applications, says Liza Henderson, director of consulting at TeleChoice, a telecom consulting firm in Owasso, Okla.

Small success

Where AT&T failed, the much smaller Interliant (formerly known as WorldCom) has survived and adapted with the times. It has been offering hosted Notes service since 1994 and touts big user clients such as Four Seasons Hotels and Resorts.

Since launching its Notes service, Houston-based Interliant has expanded its business with a suite of application hosting services ranging from Prevail Pro Hosted sales automation to Instant Team Room collaboration tools.

Being a smaller carrier has worked to Interliant's advantage, Henderson says. "The large telecommunications companies were focused only on transport. Building public networks for efficiency is tremendously different than offering business users software to make their businesses run more smoothly," she says.

But market changes, including the Internet's rise, the increasing complexity of software programs and the shortage of IT expertise, have created a ripe environment for carriers and other companies entering the application hosting business.

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Continued from page 72

to USWeb/CKS in Santa Clara and a variety of firms that specialize in airline applications. National uses more than 125 applications.

To ease such performance concerns, software developers and big software companies are tweaking their high-end software packages to ensure users will be able to access these applications via standard browsers. Analysts agree that a standard Web client will most likely offer users the best performance, but thin-client manufacturer Citrix is pushing for use of dumb terminals running its MetaFrame client or another client that can talk to a Microsoft terminal server.

Words to the wise

Regardless of the way you allow access to your company's hosted application, be sure to get a strong SLA. At a minimum, you should press for server, application and network performance SLAs that guarantee availability at rates above 99%, as well as cash compensation for failure to meet the terms of the agreement. A smart move would be deploying your own monitoring tools to ensure that the ASP is living up to its end of the bargain.

You'd also be wise not to jump into a hosted application service if you can't answer "yes" to at least one of the following questions: Will my service improve? Will my company win a strategic advantage? Will my company reduce risks? Will my company save money?

And even if you answer all four questions affirmatively, some words of caution are still in order: Not a single ASP is making money. No ASP will turn a profit this year, let alone in the next couple of years.

WALTER CALAHAN

Mark Elbaum, IS director at Sunburst Hospitality, plans to give 4,000 employees access to PeopleSoft financial applications hosted by USinternetworking.

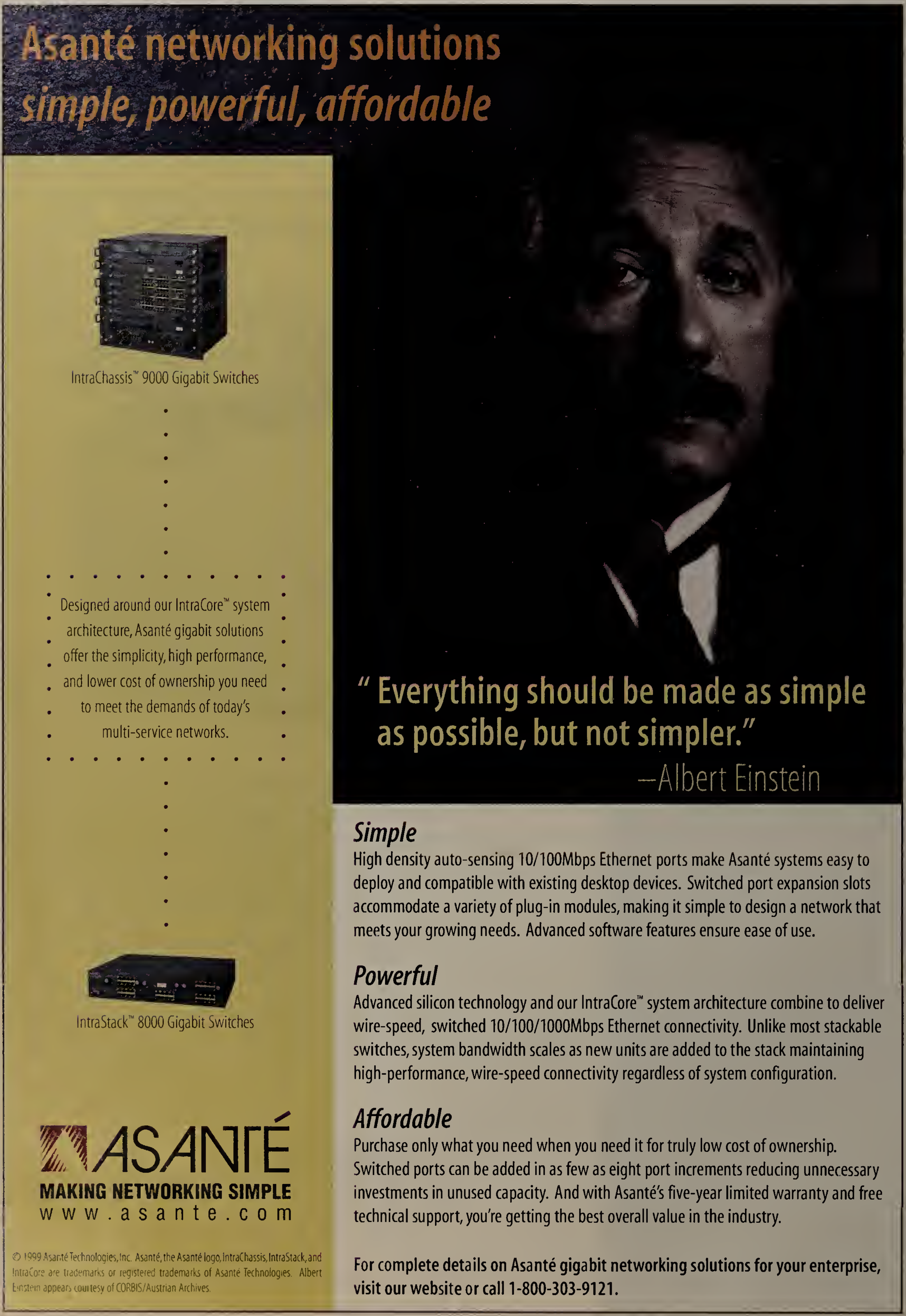
What does that mean for you? The ASP you chose today stands a good chance of merging with or being acquired by another company. The application outsourcing market of September 2000 will look much different from today's, Giga's Giera predicts.

"The telcos and outsourcing giants like EDS are going to wake up and get their acts together," she says.

Many of the large telecom carriers, including AT&T and MCI WorldCom, have been quiet when it comes to ASP services. And companies such as EDS say they will enter the market, but not until they have a superb offering, Giera says.

Only time will tell whether it'll truly be possible for thousands of users to share data centers over the Internet. Most ASPs today can't cite more than 30 to 50 customers, says Asha May, an IT service group analyst with Dataquest, in San Jose.

But with software developers, hardware manufacturers and services providers as determined to build up the ASP market as that Big Bad Wolf was in finding his way to grandma's house, you can be sure it will happen. Just give it five years or so. BUZZ



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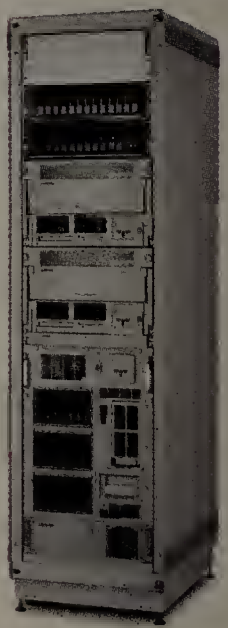


ALL-IN-ONE ACCESS

COLUMNIST'S CALL. **"If integrated access services bring down the cost of provisioning and speed up the time to provision a new circuit or service for the customer, this is ultimately good for the customer."**
— James Kobielus, "Above the Cloud" columnist

OLD AND NEW 'INTEGRATED ACCESS' SERVICES ONLY GET YOU PARTWAY TO A UNIFIED NETWORK.

By David Rohde

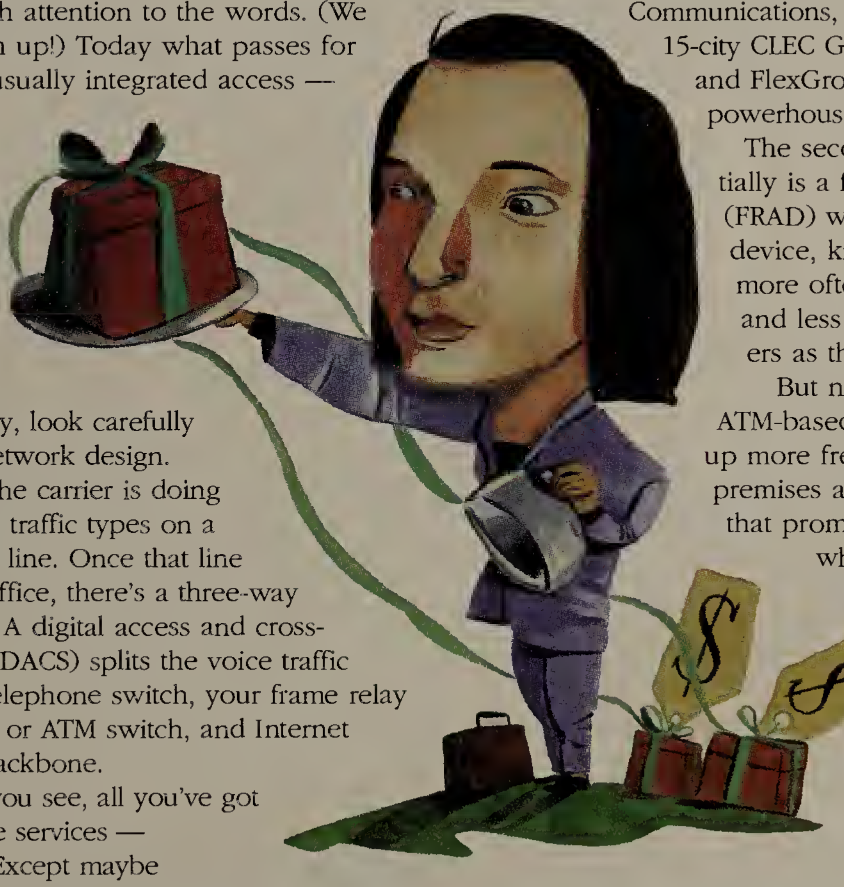
Here's a scenario followed by a pop quiz, so listen up. A carrier comes to you with a proposal for a hot new "integrated access service" in which a single box on the customer premises aggregates all your traffic types — voice, data and Internet access. "Great," you say. "Now I can take advantage of some of that convergence everyone's been talking about."

So you buy the service, the carrier installs the box, the system runs smoothly — and a month later your telecom administrator bursts into your office and throws a phone bill on your desk with all the same call-by-call long-distance tolls you thought you were getting rid of.

Do you: A) Chew the carrier representative out; B) Refuse to pay the carrier until it removes the toll charges; or C) Click over to www.monster.com and start searching for your next job.

Sorry, the most likely answer is C.

What went wrong? Well, maybe you didn't pay close enough attention to the words. (We told you to listen up!) Today what passes for convergence is usually integrated access — note that term carefully — and not an integrated carrier backbone that would really give you a single, unified network.



Before you buy, look carefully at the carrier's network design. Quite likely, all the carrier is doing is putting several traffic types on a single T-1 access line. Once that line hits the central office, there's a three-way fork in the road. A digital access and cross-connect system (DACS) splits the voice traffic to a traditional telephone switch, your frame relay traffic to a frame or ATM switch, and Internet traffic to an IP backbone.

If that's what you see, all you've got are three separate services — same as before. Except maybe now all the bills arrive in the same overnight package.

Welcome to the world of integrated access, in which literally dozens of carriers and box manufacturers are slugging it out for your business. Your challenge: figuring out how to save money and reduce complexity.

Your best tool: knowledge of exactly what equipment each carrier is purporting to put in your data center or building common space. Understanding what customer premises equipment (CPE) you'll be using will make it a lot easier to figure out what kind of service you're really getting.

The 1-2-3s of IADs

There are basically three types of gear that vendors tout as integrated access devices (IAD). The first type is based on traditional time-division multiplexing (TDM), though now multiplexer makers incorporate routing in their boxes rather than just offering V.35 interfaces to routers plus Ethernet ports and PBX links.

User organizations ordinarily don't go out and buy TDM IADs. Instead, competitive local exchange carriers (CLEC) snap up these boxes, install them on the customer premises, attach them to a T-1 line and give the whole arrangement a service name. Sometimes legacy carriers do the same thing, though you'll have to ask to find out. You'll find these setups as services such as SingleT from data specialist Intermedia Communications, PowerFlex T-1 from the 15-city CLEC GST Telecommunications and FlexGrow from incumbent local powerhouse GTE.

The second type of IAD essentially is a frame relay access device (FRAD) with voice capability. This device, known as a voice FRAD, is more often bought by enterprises and less often taken up by carriers as the basis for a service.

But now the third category — ATM-based IADs — are popping up more frequently on customer premises anchoring carrier services that promote all kinds of benefits while keeping the dreaded words "asynchronous transfer mode" sotto voce. These IADs are essentially small ATM boxes that concentrate voice, video and data, in some cases eliminating the PBX and router. They make services such as Sprint's Integrated On-Demand Network (ION) and AT&T's Integrated Network Connect (INC) possible — although these services aren't available yet because neither carrier has settled on a specific platform.

Not to worry. Intermedia and others are readying similar offerings. And in one case, ATM IADs, paired with compatible equipment at the central office, will be the basis for a carrier's entire product line. Tampa, Fla., start-up 2nd Century Communications says it is set to launch a service based entirely on a managed ATM device.

Interestingly, for all the talk about ION and INC, what the carriers offer in the way of integrated access is the first type — TDM-based services. For example,

COLUMNIST'S CALL. "Integrated access is irrelevant to users. They're looking for price/performance and functionality."
— Scott Bradner, "'Net Insider" columnist

AT&T actively promotes CerfTone, a voice and IP T-1 access service using the SlimLine product from veteran IAD provider Premisys Communications.

CerfTone is available whereas INC isn't, but be aware that it is surprisingly bare-bones. Originated by CLEC Teleport Communications Group, which AT&T bought last year, CerfTone offers no frame relay access. Instead, the service merely eliminates the requirement for buying separate dedicated access lines for voice and Internet access.

Because of their limitations, TDM-based integrated access services draw derision from the ATM device vendors and service providers. Some of them even object to the word "integrated" in the TDM service market.

"There are lots of service providers out there calling their services integrated access, but really what they're doing is bundling separate services on one facility out to the customer premises," says Vince Rocca, chief technology officer at 2nd Century. "It's not true integration because there's no sharing of bandwidth among the separate services."

A SMORGASBORD OF INTEGRATED ACCESS

AT&T actually has integrated access services in each of the ATM, frame relay and TDM categories, while other carriers tend to concentrate on one category or another.

Carrier	Name of service	Access equipment used	Comments
2nd Century	To be announced	Vina Technologies Multiservice Xchange	Entire company to be based on ATM integrated access
Sprint	Integrated On Demand Network	Cisco, Nortel products	Sprint's Paranet IT consulting division enlisted to sell ATM based service
AT&T	Integrated Network Connect	ATM equipment, but carrier declines to specify vendor	Being readied for fourth quarter launch
AT&T	Managed Multimedia Networking Service	Motorola voice FRADs	Enables multimedia traffic on frame relay circuits
AT&T	CerfTone	Premisys SlimLine	Basic TDM based service originated by Teleport, a CLEC bought by AT&T
GST	PowerFlex T 1	Premisys, Telco Systems boxes	TDM based service aimed at small, midsize businesses
Intermedia	SingleT	Vina Technologies T 1 Integrator	Pioneer in classic TDM based integrated service
GTE	FlexGrow	Premisys boxes, private labeled by a reseller	Offers voice, frame relay, other services on separate T 1 channels
MCI WorldCom	Part of On Net family of services	Carrier Access IMACS	Optional installation on end to end MCI WorldCom fiber

A true IAD should allow for dynamic bandwidth allocation, under which any part of the T-1 could be used for any application, Rocca explains. "When a person is off-hook, that means that bandwidth should be available to Internet users," he adds.

The management of these networks is also not necessarily integrated, neither for the carrier nor the user. "You might have to go from one cloud to another cloud" to follow the trail of traffic, says Ladan Mestchian, an analyst who specializes in convergence issues with market research firm International Data Corp. (IDC) in Framingham, Mass.

Many carriers sell TDM-based integrated access services on the basis of a single bill combining voice and data charges. But except for small businesses with no dedicated network staff, that's not enough of a benefit to entice corporate users, critics charge. For example, 2nd Century will offer a unified bill, but that's not the basis of its marketing pitch. "This one-bill thing is totally overhyped," says Charlotte Baker, 2nd Century's vice president of marketing. "You either have to compete on price or functionality."

The routing advantage

Part of the confusion in defining integrated access is because some of the TDM IADs evolved from older channel banks, becoming true IADs only when they added IP routing capability in hardware or software, or V.35 connections to separate routers. And according to some in the industry, even that's not enough to qualify for the term "integrated access," which ATM partisans say implies dynamic bandwidth allocation.

"They've basically stolen the term 'integrated access device' from the packet world," says Jay Shuler, director of marketing for Mariposa Technology, a Petaluma, Calif., maker of an ATM-based IAD called the ATX-100. "That's given them an aura of greater sophistication than they really have."

But there are distinctions among this group and quite a number of satisfied customers, as well.

Two of the original IAD device vendors — Premisys and Carrier Access Corp. (CAC) — date to the early 1990s. Today, these two split the largest share of carrier contracts — CAC with installations at MCI WorldCom customer sites and Premisys at AT&T and many CLEC customer sites.

But in more recent years, the company that has been making the biggest splash has been Vina Technologies in Fremont, Calif. Vina made its mark by adding IP routing capability directly into the device, eliminating the need for a V.35 connection to a separate router. The company really began making its move with CLECs in 1997. Vina's T-1 Integrator — a pizza-box-sized device — then became the basis of Intermedia's SingleT service, which Intermedia began promoting heavily.

One of Intermedia's first customers for the SingleT service was Fife Florida Electric Supply, which installed a Vina T-1 Integrator in November 1997. Within three days, Fife Florida converted some telephone trunks and a bank of modems into a T-1 line. Then it parceled the T-1 into a 256K bit/sec Internet access line and dedicated outbound and inbound voice access.

"At the time, Intermedia was the only company that was even beta-testing a product that could put your voice and data together," says Rick Canida, MIS manager for the Tampa company.

Later this year, Fife Florida will carve out another 128K bit/sec for a frame relay connection to 10 branch offices. But for now, the SingleT connection is enabling an entirely Web-based order-entry system in which contractors can place orders directly into Fife Florida's loading system.

"The contractor market works a lot on weekends," Canida says. "Our contractors can place their orders on Sunday evening, and it can be on our truck on Monday morning." Intermedia manages the Vina box remotely, and because it has built-in IP routing, "there's no need to have that $7,000 Cisco router," he adds.

The cost turnaround has been dramatic. In 1997, Fife Florida pulled in $24 million in revenue and typically spent $5,000 to $5,500 per month on voice telephony as well as outbound and 800-type data tolls for modem access. This year, Fife Florida is on target for $32 million in revenue but is spending only $2,900 per month for the T-1, 'Net access and local and long-distance voice.

Keeping your carrier's costs down

Older IAD vendors, such as Premisys, also had to play catch-up on remote management, particularly for changes in the user's choice of how many of a T-1's 24 channels to devote to Internet access. After all, in order for carriers to keep the price of the service attractive, they can't be blowing their own budget on service calls. "Once you make a CPE installation, it costs [a carrier] $350 to $500 every time they have to send someone out," says Sab Gosal, Vina's senior product manager.

Only this past summer did Premisys introduce the Managed SlimLine with remote SNMP management from AT&T and other affiliated carriers' network operations centers. Now, finally, "you don't need a truck roll," Mestchian says.

Another limitation: Premisys' SlimLine, and thus AT&T's CerfTone and similar services, can't do frame relay. But analysts don't dismiss the ability of these kinds of integrated access services to hang on into the future. "There's a lot of analog voice out there," says Kristen Flinn, an analyst with The Yankee Group in Boston. "Users who need integrated access are going to need it with a device that can handle analog voice."

There are some CLECs — even those that support frame relay on integrated access — that are careful not to preach revolution.

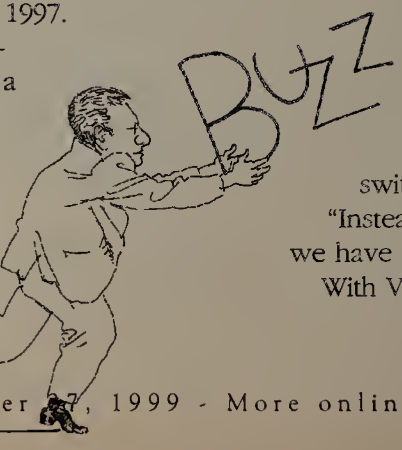
For example, Vancouver, Wash.-based GST integrates access traffic over a single T-1 line via a Telco Systems Access45. Once the traffic hits the central office, a DACS splits it between a Nortel Networks DMS 500 telephony switch and a Nortel Passport ATM switch for frame relay service, with Internet traffic in turn handed off to an ISP. From there, the three types of services are handled separately.

GST officials make no pretensions that the service — called PowerFlex T-1 — is going to revolutionize WAN services. "It saves the customer from having to pay for three separate local loops," says Heather Qualey, PowerFlex T-1product manager.

But some of the real cost savings may come from emerging ATM-based services. 2nd Century is banking on the fact that it's not using a Lucent or Nortel telephony switch, but rather a Convergent ATM switch and gateway to terminate all services.

"Instead of having a $6 million to $7 million switch, we have a $500,000 to $600,000 switch," Rocca says. With Vina's new ATM-based Multiservice Xchange

Continued on page 80



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Continued from page 78

IAD on the customer premises, 2nd Century will undercut existing T-1 Internet access prices, though it may meet its match in digital subscriber line offerings. For example, 2nd Century will offer Internet access at a minimum of 128K bit/sec, but burstable up to 1,280K bit/sec, for a price of $250 to $450, plus a long-distance toll charge of 8.5 to 9.5 cents per minute.

The CPE price also can increase the cost of an integrated-access service, even if the user doesn't own the equipment. For example, to some extent the new generation of ATM-based access devices emulates the multiservice capabilities of Nortel's Passport ATM switch, which for several years has helped some large enterprises run voice over ATM and is one of the options in Sprint ION. But pricing for the Passport starts at $20,000. The T-1 voice module alone costs $22,000, with additional cards of various types running at least $10,000.

By contrast, a fully configured Mariposa box lists at $20,000, Shuler says. That has made it attractive to users such as Virginia Tech University, which is part of a statewide ATM network called Net.Work Virginia.

On the Virginia Tech campus, an ATX-100 sits between a PBX and one DS-1 port of a FORE Systems ATM switch, says Barry Linkous, telecom engineer at the university. Through compression and bandwidth allocation, the ATX-100 can feed 48 simultaneous phone calls through the ATM WAN to two other campuses in the state, eliminating long-distance tolls.

Still, the ATX-100 has to be classified as an IAD, not an enterprise ATM switch. It has only one User-to-Network Interface (UNI), so it can't be the hub of an enterprise network. But the hub could be any ATM enterprise or carrier switch supporting the ATM Forum's UNI 3.0 or 3.1 standards, Shuler says.

CHRISTOPHER WRIGHT

Rick Canida, MIS manager at Fife Electric, has been using an integrated access service for almost two years.

Other devices are based on frame relay, making them problematic because they require the use of permanent virtual circuits. The costs associated with creating fully meshed frame relay networks can be prohibitive, 2nd Century's Rocca says. The only alternative users have if they want to use frame relay IADs in a fully converged net with a typical star frame relay configuration is to tandem the voice calls through the central site, adding to potential latency.

For users, much depends on where their networks are already going. Because integrated access only does so much, carriers tend to segment their offers, and TDM services are popular among smaller enterprises. Perhaps that explains why AT&T really has three integrated-access services — besides INC and CerfTone, it also has a little-known frame relay-based service called Managed Multimedia Networking Service.

Perhaps it also explains why it sometimes seems that integrated access is more popular at the bottom end of the market than the top. After all, network professionals at some of the largest enterprises have already passed that quiz you saw at the beginning . . . and they're still waiting for the converged service that makes sense for them. BUZZ

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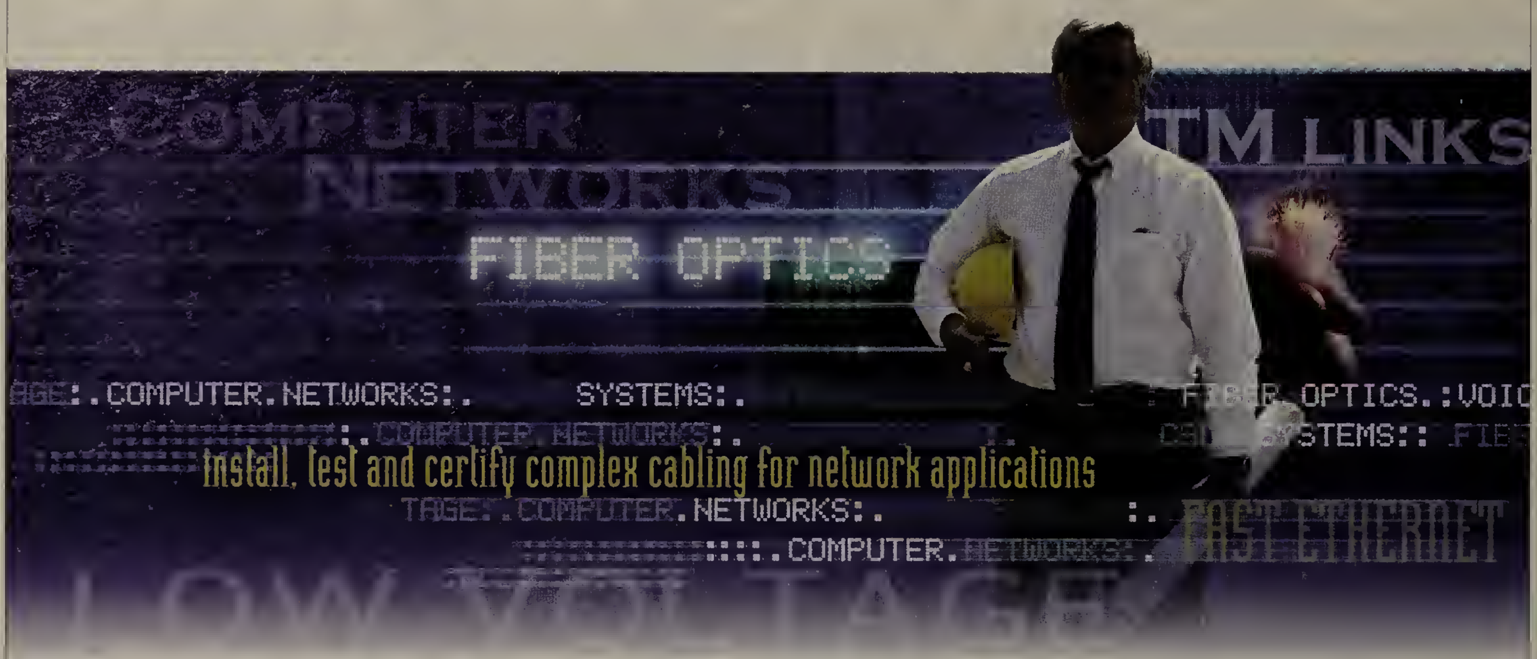

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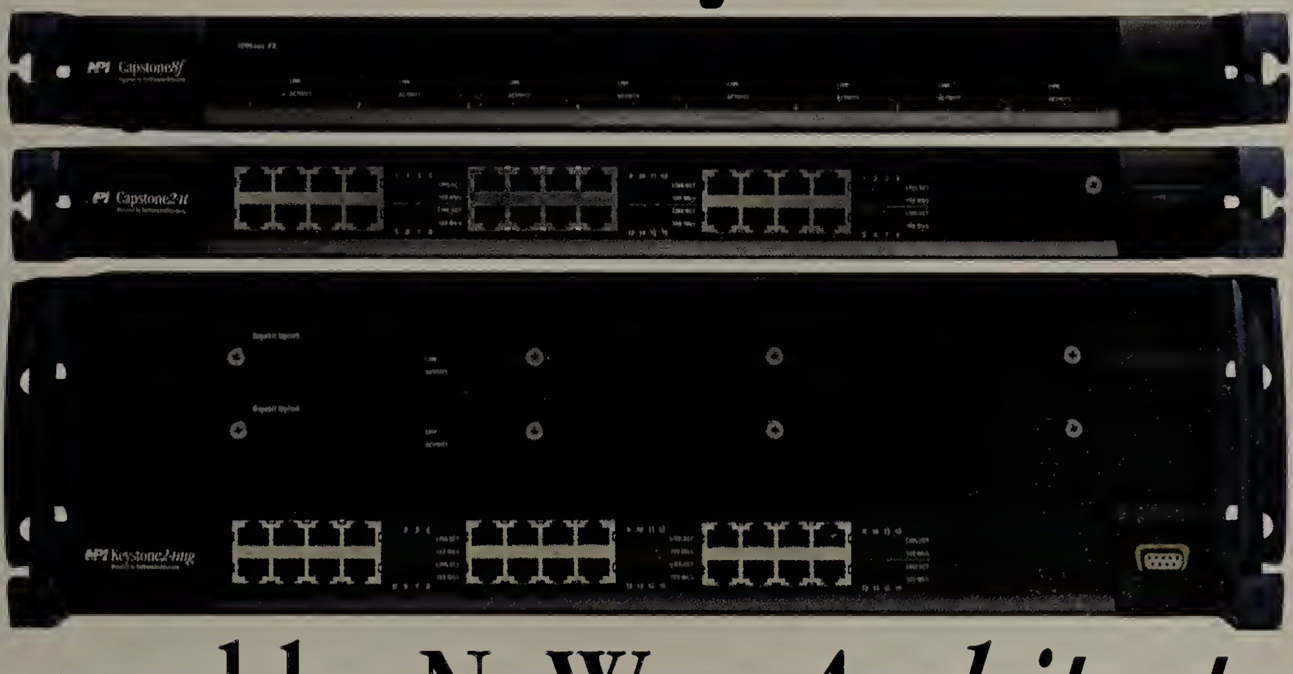

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COLUMNIST'S CALL. **"XML is a success in terms of being adapted for many different application domains. But XML will not absorb the sum total of all standards that are out there. It's just yet another set of standards that are very handy and are filling a particular niche."**
— James Kobielus, "Above the Cloud" columnist

XML ON YOUR NET

FROM DIRECTORIES TO NETWORK MANAGEMENT TOOLS, XML MARCHES TOWARD THE ENTERPRISE.

By Amanda Mitchell Henry

To be sure, XML is a hot topic. Mention the three-letter acronym and vendors prick up their ears, proclaim their commitment to this rising Internet star and exalt its magic. XML will make interoperability among network applications better, network managers' jobs easier, data interchange simpler and reusing Web content faster, they assert.

Yes, the list of claimed benefits that the emerging XML standard brings to enterprise users is long. But while vendors are announcing support for XML at a frenzied pace, enterprise users struggle to understand what XML is and why they should deploy it.

Pundits say XML is useful for Web and document publishing, electronic commerce, research applications, content management and customer support. As a set of protocols used for creating tag languages, XML goes beyond HTML by actually describing information in a way that can be easily read and understood among disparate computer systems — and people.

"XML is human readable, it provides a text format, which means I can process XML with any text handling tool, and it is an open standard," says Jon Bosak, XML architect at Sun in Palo Alto, and recognized "father of XML."

But XML deployment is slim. In a recent survey, CAP Ventures of Norwell, Mass., found that less than one-quarter of 250 respondents were implementing or planning XML projects this year or next. However, respondents did indicate that spending on XML would increase from there.

Because deployments to date are minimal, XML's impact on the enterprise is untested. Still, expectations are that the positives will far outweigh the negatives. In fact, planned support for XML in management tools and directory services could mean that XML solves management problems, rather than creates them.

"XML is going to make the life of network managers a lot easier," says Barry Briggs, chief technology officer of Interleaf, a Waltham, Mass., company that makes an XML tool. "Within five years, everything that travels across the network is going to be based on XML in one way or another; XML will behave as a lingua franca that makes network managers' jobs much simpler" by converging information and multiple IT job functions, he explains.

Early adopters see XML as a productivity booster that does little damage to the network's performance. Take, for example, the Practitioners Publishing Company (PPC), a Thompson Corp. division that caters to accountants. PPC is testing Interleaf's BladeRunner tool with hopes that XML will speed the process of porting the same content into a variety of formats. By using XML, a technical writer and production person do not need to reformat content every time it is moved to a different format.

"It takes a lot of effort to produce the same thing multiple times," says Gary Gillette, director of product systems at PPC in Fort Worth, Texas. "We want a repository that will help us generate our content whether in print, CD-ROM or online and we want to feed that content into software applications."

Gillette predicts little impact on PPC's network from XML once deployed in production mode. However, he cautions: "If anything, [deploying XML] could be a slight drag on the network performance because we'll have many more people accessing the information and there will

be more applications used to access and deal with the content elements."

Similarly, Susan Crinnian, president of intranet systems integrator CCI Networks in Phoenix, recently installed an XML-based intranet at a government site. The government agency is using XML, in part, as an intelligent way to authenticate digital signatures on documents such as purchase orders. Crinnian views XML as a way to simplify e-commerce and says, "XML doesn't really affect the network."

Where XML stands

XML has good reason for lingering in the netherworld between buzzword and something that users want to rush out and buy. The first real wave of XML-compliant software only began shipping last April, launched en masse at Spring Internet World.

And it only captured browser maker and network management consortium support in the past year. For example, Sun announced plans for a Java extension for XML, and the Desktop Management Task Force released an XML encoding spec that would have its Common Information Model (CIM) data use XML as part of its Web-based Enterprise Management (WBEM) initiative (see story, below).

In July, Novell announced plans to add support for XML to Novell Directory Services, and Bowstreet Software has gathered broad industry support around Directory Services Markup Language (DSML), which is based on XML and the Lightweight Directory Access Protocol.

Not bad for a specification that has been on the IT world's radar screen for less than two years. XML Version 1.0 arrived in February 1998, when a World Wide Web Consortium working group, led by Bosak, took the Standard Generalized Markup Language and streamlined it into a practical metalanguage. Version 1.0 remains the current specification, and details of when the next incarnation will appear are sketchy.

COLUMNIST'S CALL. "XML offers substantial potential, but the authoring environments currently supported are probably not sophisticated enough to make XML a practical enterprise play."
— Thomas Nolle, "Reality Check" columnist

XML TECHNOLOGIES

XML 1.0	Defines what tags and attributes are.
Xlink	Defines how to add hyperlinks to an XML file (still in development).
XSL	A specialized language that transforms one XML file into another; also can style properties simultaneously. This type of activity could have the most impact on networks as it lets one machine fetch and format Web pages and present them on another.
DOM	A set of function calls manipulates XML (and HTML) files from a programming language.
CSS	The style sheet language, applies to XML as it does to HTML.
Namespaces	Describes how to associate a URL with tags and attributes in an XML document for use by applications.

Jon Bosak, considered the father of XML, says the standard's designers traded off speed on the client for an open design.

And some mystery surrounds XML's performance abilities, given low rates of deployment. XML is designed to work best in an environment of "loosely coupled protocols," such as the Web, where managers don't have central control over all the nodes, Bosak says. While there are significant gains to be made in data interchange from XML's open design, the trade-off may be speed on the client.

"The XML design effort explicitly ruled out efficiency as a goal of the format itself," Bosak says. "There is an open question as to how much efficiency we really traded off."

Security also is of concern. "Any time you expose something in a standard format, you have to ask how secure is that packet of material," says Arvind Narain, a director of product marketing at Network Associates in Santa Clara, Calif. "Is it tagged for security or does it require additional authentication?"

On the bright side for network managers, Narain points to the support for XML in WBEM and how that will lay the groundwork for sharing device information among management tools. For example, any record set that can be posted as an XML file would then become available to reporting and management products that support XML, including those from Network Associates.

"As it relates to WBEM and CIM, XML is going to be key to the success of interoperable management applications, with CIM as the standard data model and XML for encoding and accessing that data," says Barb Goldworm, director at Enterprise Management Associates, a research firm in Boulder, Colo.

Similar to Network Associates, Austin, Texas-based Tivoli is going to support XML in its wares. "XML is to data what Java is to programming," says Jeffrey Snover, principle engineer at Tivoli, explaining that XML will provide a cross-platform way to get at data.

The advantages of adding XML support to directories similarly benefits enterprise users. It gives directories much needed interoperability. For instance, Bowstreet's DSML scheme defines the directory contents so any directory can tap and use the data.

The DSML effort has garnered support from big industry players, including IBM, Microsoft and Novell. Because DSML will let directory information be shared among XML applications, it could be key for e-commerce partners that share information such as purchase orders or even for separate networked applications that rely on a single directory.

XML has barely buzzed out the door, but it has already secured predictions of a steep adoption curve. Still, as with any buzzword, time will tell whether the advantages of XML are real or not. For now, XML is at least worth a closer look.

Henry is a freelance writer in San Carlos, Calif.

Net management with XML

Sharing management information could get easier when XML comes into play.

In October 1998, the Desktop Management Task Force (DMTF) placed XML at the center of easier network management when it released a specification that encodes its Common Information Model (CIM) schema in XML. The intent is to let users share management information among disparate platforms.

CIM is the DMTF's standardized object-oriented information model; XML is the mechanism for encoding data and HTTP is the method of transporting the data.

As part of the DMTF's Web-based Enterprise Management (WBEM) initiative, the addition of the XML specification means applications will be able to retrieve CIM data using XML Web technology. Each WBEM-compliant management tool will support XML and will therefore be able to exchange information easily in a common language understood by each participating platform.

"XML will provide interoperability that we've never had before between management applications," says Barb Goldworm, director at Enterprise Management Associates, a research firm in Boulder, Colo.

Among the vendors pledging to support the DMTF's WBEM initiative are 3Com, Adaptec, BMC Software, Cisco, Compaq, Computer Associates, Dell, Gateway, Hewlett-Packard, Intel, Micron Electronics, Microsoft, Network Associates, Novell, Platinum Technology (recently acquired by CA), Seagate Software and Tivoli.

While the DMTF is still carving out its compliance requirements, the plan is that any vendor conforming to the WBEM initiative must also support the XML component. But because WBEM's XML encoding specification is so new — Version 2.0, which included the HTTP portion, was released in June — XML-compliant products won't ship en masse immediately, according to DMTF President Winston Bumpus.

WBEM vendor Microsoft, for example, plans to include support for XML in its Windows Management Instrumentation service, which is included in Windows 98, NT and the 2000 beta.

As vendors climb aboard the new XML-compliant WBEM initiative, hopes are that a major source of managers' problems will disappear. "With XML, all management tools should be able to work together," Bumpus says.

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COLUMNIST'S CALL **"This space trades largely on buyer fears of hacking. Most organizations won't need intrusion detection if network and application security are adequate, and most products won't perform well enough to provide any incremental benefit."**
— Thomas Nolle, "Reality Check" columnist

HACKER ALERT

INTRUSION-DETECTION SOFTWARE IS HOT, BUT CAN IT REALLY STOP HACKERS COLD?

By Ellen Messmer

Does anybody need to be told again about marauding hackers using automated scripting tools to pound on a network until they break in like barbarians sacking Rome? Of course not. The question is, what's the best way to stop these modern-day vandals. By most accounts, intrusion-detection software is the answer.

Vendors claim these security tools prevent or detect unauthorized use of networks and host files, whether the breach comes from inside or out. While the tools are immature, expensive and far from invincible, security professionals say they remain valuable because they provide a front line of defense.

"Intrusion detection does the same thing as network management on a different level," says Rhonda MacLean, chief information security director at the Bank of America. "It provides intelligence to co-relate information to give you alerts about attacks."

Intrusion detection is not meant to be the be-all and end-all security solution. Rather, it is a smart addition to an overall security strategy that would include other elements, such as antivirus software.

Intrusion detection provides components that allow for vulnerability assessment and network monitoring, among other functions, MacLean says. "But you have to put the components in perspective in terms of total security. There is no magic bullet," she adds, noting that Bank of America uses several types of intrusion-detection products, including the RealSecure scanning and network-monitoring tools from Internet Security Systems (ISS).

The question is, how well do these and other intrusion-detection products work?

Certainly using intrusion detection is far better than not monitoring for attacks at all. Then again, intrusion detection hardly qualifies as super armor.

Vendors of first-generation, software-based systems have each taken their own technical approach to intrusion detection. The resulting products are complex, and always changing — their "attack signatures" need to be updated frequently so that new threats can be spotted.

Intrusion-detection products tend to spew out massive amounts of information without doing enough to make that data intelligible to the all-too-human net manager. For instance, the alerts generated are seldom well-integrated into larger enterprise network management systems. So even if a threat is detected, triggering an automated response to the threat is difficult, at best.

Hopes are high, though, that intrusion-detection products will not just report trouble but also automate responses to threats by instructing network devices how to behave when security problems erupt. Some progress has been made: ISS, Network Associates, Network-1 Security Solutions and Axent Technologies have products that perform intrusion detection in some way with particular vendor gear. ISS products can block the ports on a Check Point Software firewall. Network Associates and Network-1 can reconfigure their firewall offerings through an intrusion-detection alert.

This response function could become far more sophisticated. For instance, it may eventually become possible to lure hackers with decoy servers, then collect enough data to track and prosecute offenders. Some early forms of this type of security are available in products such as ManHunt, a decoy Web server offered by Recourse Technologies (*NW,* Aug. 9, page 31).

The Internet Engineering Task Force has begun work in the area, but as yet has not formulated standards for intrusion detection, much less intrusion response. "Intrusion detection is at the beginning, about where antivirus was a few years ago," MacLean says.

Intrusion-detection software for host systems or network monitoring can be pricey, at times costing thousands of dollars per server. So most organizations only deploy the software at network points that give them most worry, perhaps behind a firewall or on servers storing mission-critical or sensitive data.

A young market

Intrusion-detection products can be roughly divided into two main categories. The first is the vulnerability assessment tool that scans for security holes on the network or host machine. The second category relates to products that look for attempts at unauthorized use of a host system or network.

The latter category uses agents that can spot trouble based on the attack signatures they recognize. More sophisticated versions of host- or network-based agents are starting to recognize suspicious activity patterns — anomalies that use something more like artificial intelligence, rather than a specific attack signature, to spot questionable activity.

COLUMNIST'S CALL. "Intrusion detection isn't just about outsiders getting in — it's also about insiders going places they're not supposed to."
— Dave Kearns, "Wired Windows" columnist

Like most immature markets, intrusion detection is dominated by small, independent software vendors. For example, Axent and ISS lead the host- and network-based tool markets, respectively, reports International Data Corp. (IDC), a research firm in Framingham, Mass. (See story, below.)

Other players include Cisco, with NetRanger; Computer Associates, with SessionWall-3; and Network Associates, with CyberCop Scanner.

But as the stakes raise, so does the market's attractiveness to bigger players. In 1998, the security industry sold $91 million in vulnerability assessment tools and $45.3 million worth of intrusion-detection software, IDC says. But the firm projects strong growth, forecasting a $262 million market this year for vulnerability assessment and intrusion-detection sales combined. That market will grow to almost $1 billion by 2003.

Analysts are cheered by the fact that small, independent players are driving the technology instead of, say, Microsoft.

"You have to have an independent vendor doing this. If you didn't it, would be like the fox guarding the henhouse," says Ted Julian, who recently left his position as research analyst with Forrester Research to become a start-up advisor with Battery Ventures, a venture capital firm in Wellesley, Mass.

BOB DONNAN

Rhonda MacLean, chief information security director at Bank of America, has incorporated intrusion detection into the corporate security scheme.

"Microsoft and Cisco have no credibility with users in this market," says Jim Hurley, an analyst for security topics at Aberdeen Group, a market research firm in Boston. "Users tell us that."

Nonetheless, Axent and ISS could easily face an upset in the future. IBM is one of the few industry giants with credibility in this area, Hurley says. The company has been quietly working on an intrusion-detection product called Haxor, but has yet to announce a ship date.

Likewise, Cisco has been making gains with NetRanger, which it came by through its purchase of security firm WheelGroup. But if Cisco fails in this market, it's "just a rounding error," Julian insists.

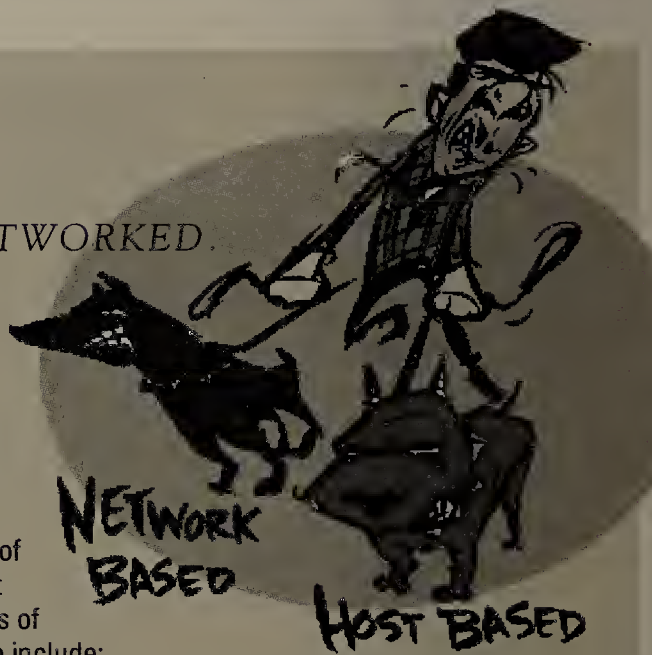
And there's no reason to predict failure. Cisco is forging ahead to add intrusion detection to its firewalls, routers and switches, and this may presage the trend in integrating security features directly into operating systems or applications.

In the meantime, corporations are discovering they have another option. Rather than buying intrusion-detection products, they can lease a service. GTE Internetworking and MCI WorldCom Advanced Networks offer scanning services on a subscription basis.

All of which gives the intrusion-detection market an ever-growing aura of validity and makes it a viable option for a security manager's arsenal today. With the number of hacker exploits increasing on practically a daily basis, intrusion-detection tools let you see the evil. Despite the drawbacks of their youth, that's a valuable contribution.

Intrusion detection: a matter of taste

TOOLS IN THE GENRE COME IN TWO FLAVORS: HOSTED AND NETWORKED.



When it comes to choosing a method for detecting intrusions, you've got a choice between host- and network-based systems.

With a host-based scenario, agent software is installed on the server that is to be monitored (sometimes a PC can host the agent and stand watch over the server or other devices). The agent tracks unauthorized access attempts or other malicious activities on that server. Products include Axent Technologies' Intruder Alert, CyberGuard's Centrax, ODS Networks' CDMS, Security Dynamics' Kane Security Monitor and Tripwire Security's Tripwire.

In a network-based strategy, agents are installed on LAN segments or behind firewalls to monitor and analyze network traffic. Axent's Net Prowler, Cisco's NetRanger, Computer Associates' SessionWall-3, Internet Security Systems' (ISS) RealSecure and Network Flight Recorder's Network Flight Recorder fit in this category.

Intruders beware

Host-based intrusion-detection software may provide better application-layer security than can network-based tools because the host software can detect failed access attempts. It can monitor the number of files or directories accessed by a user. But it is also expensive and time-consuming to load the agent software on large numbers of servers and desktops. Moreover, the software has to be upgraded regularly as new software vulnerabilities are discovered.

Conversely, network-based software can be fairly easy to deploy. However, it too has downsides. One is that it can generate false positives about threats, and that means headaches for nothing. Another downside is that the software is not typically integrated into larger network management systems so net managers can't gain an integrated view without proliferating yet more monitors.

Deciding what to do depends on the importance of your data and the money you have to spend. Host-based software is more expensive, so deployment is usually limited to servers with sensitive information. Axent's host-based Intruder Alert 3.0, for example, costs $995 per server and $95 per workstation, plus $1,995 per manager. That adds up quickly for a large enterprise with hundreds of servers to monitor. In comparison, the network-based intrusion-detection RealSecure Network, from ISS, lists at $8,995.

It's worth noting that these vendors have been busy invading each other's historic turf by adding new products, either host- or network-based, to compete as directly as possible against the other.

How vulnerable are you?

Likewise, the vulnerability assessment tools market is segmented into host-and network-based products. Vulnerability assessment tools are off-shoots of intrusion-detection software that scan for security holes. Examples of products in the host-based camp include: Axent's Enterprise Security Manager, Bindview Development's NOSadmin, Cyberguard's Centrax, Security Dynamics' Kane Security Analyst, Computer Associates' Platinum PCM, ISS' System Scanner, as well as a freeware package called COPS.

For network-based vulnerability assessment, look to Axent's NetRecon, Cisco's NetSonar, ISS Internet Scanner, L3's Expert, Netect's HackerShield, Network Associates' CyberCop Scanner, Web Trends Security Analyzer, and two freeware programs — SATAN and Nmap.

The advantage of host-based vulnerability assessment products is they can deliver real-time information, which gives a system administrator a better ability to assess risk levels. The disadvantage is that the products require the administrator to install the necessary software agents on a large number of systems. This gets expensive and makes installation complex.

For example, Axent's Enterprise Security Manager 5.0, the leading host-based product, costs $1,995 for the manager console, $995 for each server agent and $95 for the workstation agent. The network-based ISS Internet Scanner, on the other hand, costs $2,795 for a 30-device license for any server or workstation.

Network-based vulnerability assessment products scan to take an inventory of network components and hosts. They analyze that information against a database of known vulnerabilities and recommend a fix. The advantage is ease of use. The downside is that the products deliver just a snapshot, not a real-time analysis.

At the least, every company should run a vulnerability check periodically, even if it uses hired guns, such as vulnerability testing services from security consultants or systems integrators. The money question is unavoidable. Installing host-based software on every server you have is great — if you can afford it.

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THE SPIN CYCLE

THERE'S NO END TO THE BUZZ IN THIS BIZ, AS THIS LOOK AT YET ANOTHER 10 TECHNOLOGIES SHOWS.

By Paul Desmond

It takes time for an emerging technology to generate a full-fledged buzz, a real "can't go the day without hearing something about this" kind of thing. Then, just when honest-to-goodness products make their way into enterprise networks, the buzz fades. That's the spin cycle for you. Throughout this issue, we've dug into various technologies spinning through this cycle; here we offer a brief look at 10 more — corporate portals, Gigabit over copper, super-fast routers, wave division multiplexing, digital subscriber line services, personal digital assistants, Web caching, Windows 2000, e-mail management and public-key infrastructure.

Portal potential

John Gregory, a marketing specialist for the U.S. Postal Service, is sold on the idea of corporate portals. When he came to the agency in November 1998, he inherited a custom portal project. The portal was the latest in a line of projects aimed at giving some 3,000 internal sales and marketing personnel easier information access.

Originally, users got at the data — information on competitive companies and products or potential customers, for example — via a traditional client/server network. Then the Postal Service went to an intranet and saw usage double. The portal, launched the first week of July, should continue that growing usage trend, Gregory says.

"Ease of use, more creative design to make the important stuff obvious, and more-powerful search tools will drive the growth," he notes.

Through a portal, each user gets better links to data — internal and external — needed to get the job done. And network managers who have portal software at their disposal get tools that make it easier for them to tie databases, application servers and other resources into Web servers.

Guy Creese, senior analyst at Aberdeen Group in Boston, says a portal should be able to handle structured data, such as reports and tables, as well as unstructured data such as documents. A portal also needs to be scalable, meaning it must have the ability to keep up as demand increases, such as by running on multiple servers simultaneously.

Whether a given portal will be able to do all that depends largely on the kind of vendor offering the portal. Vendors whose forte lie in document management, enterprise resource planning, search engines or any number of other disciplines are adding Web front ends and some rather limited integration tools and declaring themselves portal vendors.

COLUMNIST'S CALL. **"There's a real use for corporate portals as being basically just a template that a corporation has for its individual users."**
— James Kobielus, "Above the Cloud" columnist

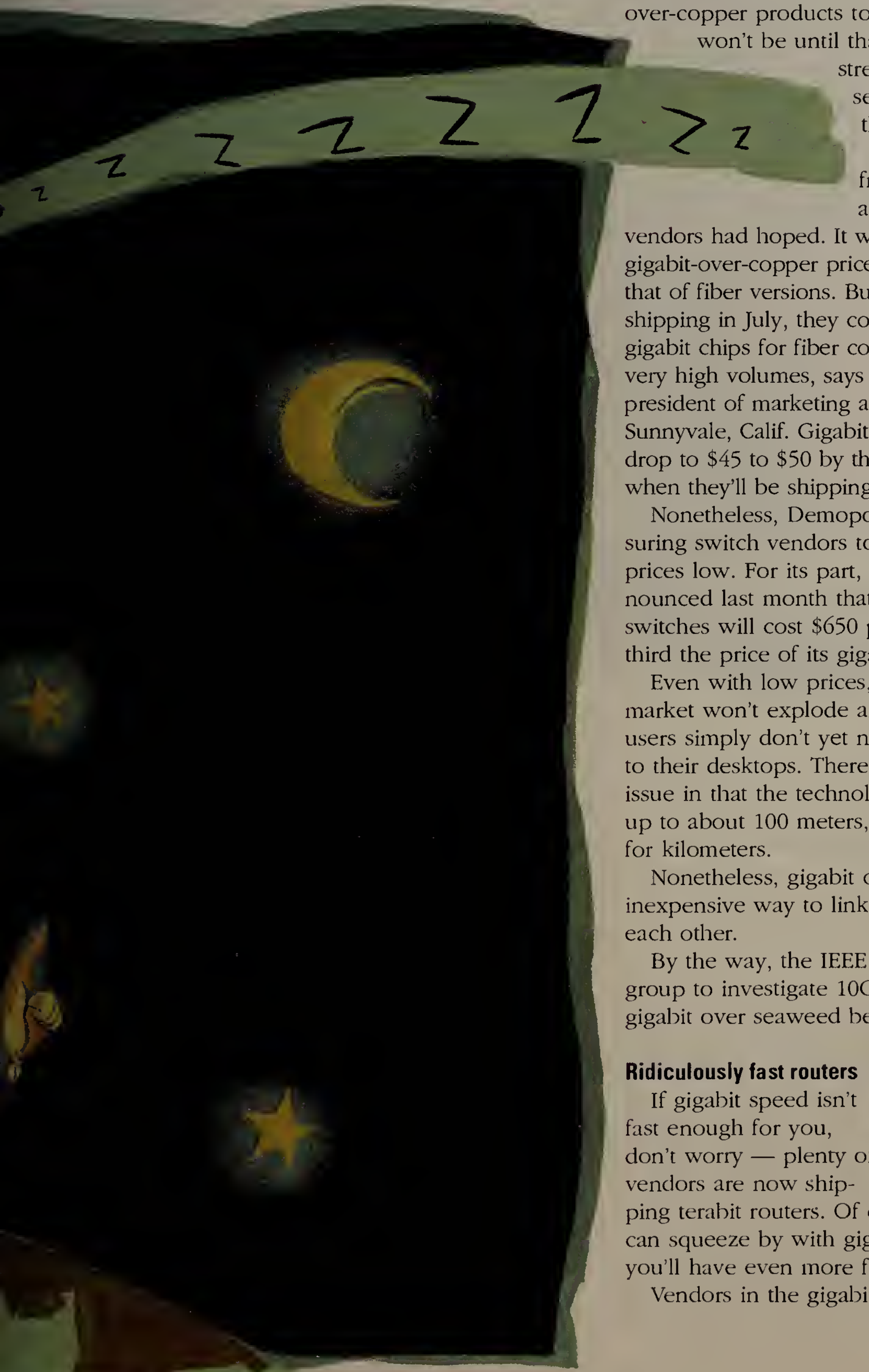
To find a "pure" portal vendor, turn to a start-up such as Epicentric, Plumtree Software or Portera Systems. These companies have more incentive to provide tools for helping you integrate all kinds of data into your portal, as Gregory discovered.

He has been beta-testing Epicentric's product, which he says makes the process of integrating internal and external resources "less daunting" than doing it yourself. And on the external side, Epicentric helps negotiate with content providers.

It's early in the game yet, but analysts expect in a year or two portals will play a key role in enterprise nets. Kevin Warbach, managing editor of the newsletter "Release 1.0" from EdVenture Holdings, is especially bullish.

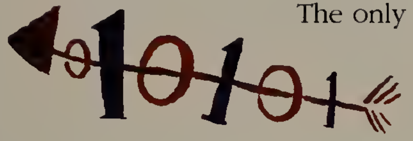
"Long term, the corporate portal becomes the desktop and potentially the operating system for the enterprise," he says.

Whoa, now. First things first.



Gigabit over seaweed

It wasn't so long ago that the very idea of Gigabit Ethernet was enough to cause a buzz. Now Gigabit Ethernet is practically ho-hum; everybody's doing it. The only challenge is getting it to work over cheap, crummy old wire.



OK, maybe Category 5 copper isn't exactly as bad as all that, but it's definitely less expensive than fiber. And that's attracting users to the idea of gigabit over copper.

So as you can imagine, all the mainstay Gigabit Ethernet vendors are fairly champing at the bit to get products out the door, if they haven't already. Some vendors experienced delays because their chip suppliers, mainly Broadcom and Level One Communications, took longer than expected to deliver the chips that make all this possible.

But you can expect a steady trickle of gigabit-over-copper products to be flowing by year-end. It won't be until that trickle becomes a stream, however, that you'll see the price benefits that the technology promises.

That's because pricing from the chipmakers isn't as aggressive as some switch vendors had hoped. It was widely expected that gigabit-over-copper prices would be roughly half that of fiber versions. But when the chips started shipping in July, they cost about $75. Meanwhile, gigabit chips for fiber cost $60 to $70, or $50 for very high volumes, says Drusie Demopoulos, vice president of marketing at Foundry Networks in Sunnyvale, Calif. Gigabit copper chips will probably drop to $45 to $50 by the middle of next year, when they'll be shipping in volume, she adds.

Nonetheless, Demopoulos says, users are pressuring switch vendors to keep gigabit copper prices low. For its part, Foundry Networks announced last month that its copper-based FastIron switches will cost $650 per port, or roughly one-third the price of its gigabit fiber switches.

Even with low prices, the gigabit-over-copper market won't explode any time soon. Most end users simply don't yet need that kind of bandwidth to their desktops. There's also a distance limitation issue in that the technology generally works only up to about 100 meters, whereas fiber can stretch for kilometers.

Nonetheless, gigabit over copper will be a good, inexpensive way to link switches to servers and to each other.

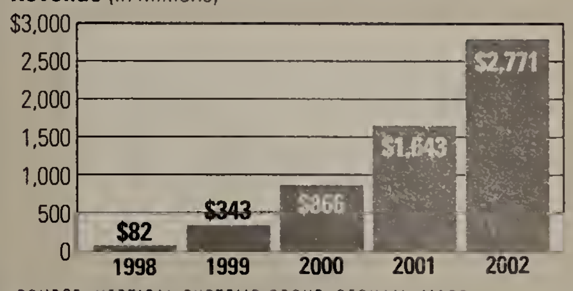
By the way, the IEEE has formed a working group to investigate 10G bit/sec Ethernet. Can gigabit over seaweed be far behind?

Ridiculously fast routers

If gigabit speed isn't fast enough for you, don't worry — plenty of vendors are now shipping terabit routers. Of course, if you think you can squeeze by with gigabit routers for a while, you'll have even more from which to choose.

CORE IP ROUTER MARKET WORLDWIDE

Products in this segment have packet processing throughput of at least 40G bit/sec.



SOURCE: VERTICAL SYSTEMS GROUP, DEDHAM, MASS

Vendors in the gigabit/terabit router market include start-ups and stalwarts, from Avici Systems, Juniper Networks and Pluris to Cisco, Nortel and 3Com. And then there are the start-ups that have been acquired by stalwarts, namely Argon (Siemens), NetCore (Tellabs) and Nexabit (Lucent).

No matter the provider, one thing is clear: Customers are overwhelmingly carriers and ISPs — a fact that no one expects to change much anytime soon.

Rosemary Cochran, principal at Vertical Systems Group, a research firm in Dedham, Mass., says these core IP switch/routers, as her company calls them, serve two main purposes for service providers: They provide more raw throughput and, in the longer term, bring in a platform capable of carrying voice and data over IP.

As for enterprise users, only those that are already using OC-12 connections will need to consider a terabit-speed router, Cochran says.

Enterprise users are more interested in gigabit routers, says Rick Forberg, director of marketing for LAN systems at 3Com. He reckons companies with more than 2,000 users in the same campus net would have a serious interest in gigabit-speed Layer 3 switch/routers. Of those, maybe 25% to 35% have near-term deployment plans, he says.

So what's in it for the average user in all this terabit talk? Essentially, you get to keep using the Internet without experiencing horrific performance problems.

"If we don't keep cranking up the throughput of the switching points, the congestion's going to get worse and worse," says Bob Bellman, principal at Brooktrail Research in Natick, Mass. "There's not much more to be said about it than that."

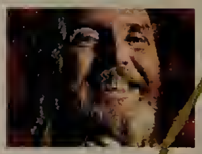
What about price decreases, given the greater economies of scale these terabit behemoths bring carriers and ISPs? Not so long as the demand is there, Bellman says.

And what of advanced QoS features that the high-speed router vendors promise? Those are being worked on, but right now interoperability problems abound, Cochran says. "There's no core IP router that's standard to the point where it's totally compatible [with other vendors' equipment]."

In short, unless you're one of the biggest fish in the enterprise sea, focus your attention on some other buzz topic and let the service providers worry about this one.

Dopey predictions of free bandwidth

If you had a nickel for every time you



COLUMNIST'S CALL. "There is a likely value to integration of PDAs in a network context. But the problem we have right now is that all of the purchasing trends being discussed really don't have as much to do with the value of PDAs as they do with the political influence of the PDA buyer." — Thomas Nolle, "Reality Check" columnist

heard some pundit predict that bandwidth will cease to be an issue in the next year or two, odds are you'd have at least a couple bucks and the goods on some otherwise fairly reasonable industry watchers.

Sure, wave division multiplexing (WDM) and the closely related "dense WDM" (DWDM) are fairly amazing technologies that can help you increase the capacity of a single fiber-optic line by at least fourfold. But if you think for even a fleeting second that will translate into "free bandwidth" — or anything close to it — then you've got to spend a little more time trying to understand this whole capitalism thing.

Definitions of the technologies vary somewhat, and the terms are often used interchangeably. But if you get four waves out of a fiber, that's basically WDM, and if you split a signal into eight or more waves, that's DWDM, says Richard Barry, architecture director at optical network switch-maker Sycamore Networks.

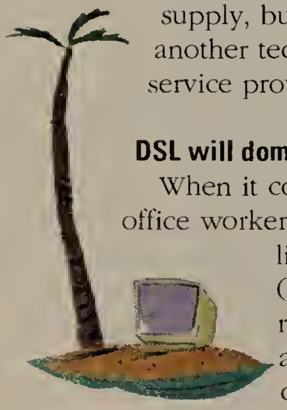
As is the case with gigabit and terabit routers, carriers will reap benefits from WDM and, to a greater extent DWDM, which is the technology of choice in long-haul nets. Of course, there are also applications for WDM in fiber-based LAN and campus environments. But in many cases, analysts say, it will be less expensive for companies to simply pull more fiber through existing conduit, or light dark fiber that's already installed, than to buy WDM equipment.

The metropolitan area could be more interesting, however, when coupled with the increasing number of competitive local exchange carriers offering fiber — dark or otherwise. Even on the low end of the WDM scale, the technology would let companies extend campus LANs across a metropolitan area with little or no loss in speed.

Here again, though, the number of companies that need the capacity WDM can provide is relatively small. "The masses are more than content if they can beat T-3 at this point," says 3Com's Forberg. Demand will someday catch up with supply, but for now WDM/DWDM is another technology of interest mainly to service providers.

DSL will dominate

When it comes to supporting remote office workers and telecommuters, it looks like digital subscriber line (DSL) services will rule the roost. Cable modem services are still seen as more of a consumer option than a business one — and for good reason.



Cable networks are fraught with security and bandwidth-contention problems stemming from the fact that cable is a shared medium, says Lisa Pierce, director of global telecommunications services for Giga Information Group in Cambridge, Mass. If you and your neighbor have cable modem service, it's highly likely you're sharing the same bandwidth.

DSL, on the other hand, gives you guaranteed bandwidth on a line that's all your own — at least to the local carrier's point of presence.

Among the many flavors of DSL, Pierce favors symmetric over asymmetric because the former supports bidirectional high-speed links that operate to around 768K bit/sec. ADSL, on the other hand, supports a much faster downlink than uplink. Workers in remote offices will often be creating large documents and will need the faster uplink pipes, she says. That may become a moot point, however, as carriers continue to offer ever-faster versions of ADSL, with upstream links up to 896K bit/sec.

This, of course, is assuming you can get DSL at all. While in large metropolitan areas you're likely to have your choice of cable, ISDN and probably a number of DSL providers, the story is far different in more remote areas — or even not-so-remote locations that just happen to sit too far from a central office to support DSL.

There are other issues, including standardization, especially for SDSL, and the ability to support voice, which providers have been slow to do. Many providers are also relatively small companies that may not remain economically viable on their own.

DSL vs. CABLE MODEMS

Worldwide xDSL equipment and shipment forecast (millions of units).

	1999	2000	2001	2002	2003
xDSL CPE units	1.0	2.3	4.0	6.4	9.8
xDSL central office ports	1.3	2.5	4.0	5.4	6.9
Cable modems	1.8	2.8	3.7	4.5	5.3

SOURCE DATAQUEST, SAN JOSE

Still, there's just too much momentum behind DSL for it to fail. Dell'Oro reports that in the first quarter of this year, the DSL equipment market grew 51%, while the market for head-end and client-side cable equipment grew 14%, both vs. the previous quarter. That's telling given the size of each market is comparable — first quarter 1999 revenue of $155.3 million for cable and $150.4 million for DSL.

Similarly, Dataquest predicts DSL will overtake cable modems in terms of customer premises equipment ports shipped in 2001 (see graphic).

PDAs coming of age

About 80% of the Palm organizers sold by 3Com's Palm Computing unit are used in work environments and 50% of them are ultimately paid for by a corporate account, says Chuck Yort, senior director of enterprise sales for Palm. And some 1.9 million smart handheld devices will be sold this year, according to International Data Corp., a market research firm in Framingham, Mass.

Still think you don't need to worry about these sorts of personal digital assistants (PDA)?

At the same time that sales are booming, new applications are emerging that will have PDAs pounding on more and more enterprise nets, with the blessing of central IS.

For example, Palms figure heavily into a data entry and collection system that American Medical Response is building for San Mateo County in California, says Eric Gee, project manager for AMR, a nationwide ambulance provider based in Aurora, Colo.

Paramedics will use Palm units to complete patient care reports on each emergency. At the end of a shift, each paramedic will upload all the reports to a central database.

Emergency 911 dispatchers, ambulance providers and hospitals will be feeding data on the cases to that database as well. Tapping into the database, AMR will be able to research which neighborhoods have a higher incidence of cardiac arrest, for example, and make sure local paramedics are equipped accordingly. The database also should help in training paramedics by enabling comparisons of the original problem assessment with the ultimate diagnosis and outcome.

"The Palm is the core of everything," Gee says. Currently, laptops and similar equipment cost $4,000 to $8,000 apiece, making their widespread use cost-prohibitive. "We can put a Palm in everybody's hand for $300."

Diana Hwang, research manager at IDC, expects PDAs to find their way into the enterprise, but she also expects them to bring management and security problems. "If you've got sensitive company data on one of

Continued on page 94

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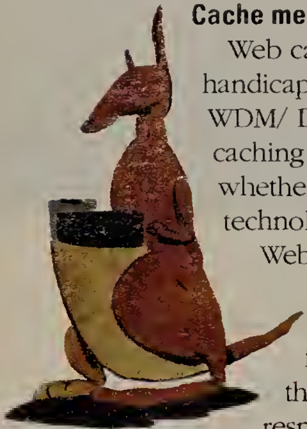
COLUMNIST'S CALL. "Users should put Windows 2000 in their lab in mid-year 2000, then spend six months at least playing with Active Directory, learning Active Directory, manipulating Active Directory and maybe around the first of the year 2001, plan small rollouts."
— Dave Kearns, "Wired Windows" columnist

Continued from page 92

these devices, what happens if you lose the thing?" she asks.

Vendors are dealing with these issues. 3Com and Computer Associates in July announced software that would enable CA's Unicenter TNG to distribute software to Palm devices and pledged to develop additional Unicenter asset and inventory management and remote control tools. For security, 3Com has encryption wares that will protect corporate data, Yort says.

Despite the drawbacks, users expect big things of their Palms. IDC conducted a survey on user perceptions regarding handheld computing devices. More than three-quarters of the 300 plus users who said they used the devices mainly to increase productivity said they were realizing gains of between one and four hours per day. And that survey was conducted last year.



Cache me out

Web caching is a tough technology to handicap. Like big huge routers and WDM/ DWDM, there's no question Web caching is great for ISPs. It's less clear whether enterprise users will find the technology useful.

Web caches store copies of oft-accessed Web pages, enabling end users to access the pages from the nearby cache instead of the faraway Internet. This reduces response time and conserves wide-area bandwidth.

Peter Christy, managing partner for research at the Internet Research Group, a consulting firm in Los Altos, Calif., expects the market for Web caching products will grow from $88 million in 1998 revenue to $1.6 billion in 2002.

How much of that money will come from enterprise customers is the big question. "So far, the enterprise hasn't taken off," Christy says. "We're sure it will."

The impetus will be Web-enabled applications that have a high business value, he says. "It won't be to accelerate access to ESPN scores."

Other industry watchers aren't so sure. Enterprise customers will only deploy Web caching in a big way when it's free, says Ted Julian, who recently left his position as research analyst with Forrester Research to join Battery Ventures, a venture capital firm in Wellesley, Mass., as a start-up advisor.

He's only half-kidding. Julian expects equipment providers will build caching into network equipment such as edge routers, making the capability just another feature or, at worst, a low-cost upgrade.

But overall, Julian says the enterprise market will be small potatoes for Web caching companies. "That's not to say there won't be an increase in volume for the enterprise, but it'll be a rounding error; it'll be anemic," he says.

One thing about Web caching is clear, however, and that is the type of cache that users want to deploy. The so-called cache appliance — a box that does nothing but Web caching — has won over more limited proxy servers and multipurpose servers. These appliances are available from companies such as CacheFlow, Cisco, IBM, InfoLibria, Inktomi and Network Appliance.

Prices are likely to come down as well. Whereas high-end cache appliances once sold for up to $100,000, companies including Novell have announced cache software that runs on a dedicated Compaq or Dell server at a price Christy estimates to be in the $40,000 range. "It's pretty hard to buy a $100,000 Dell server," he says.

Waiting for Windows 2000

Windows 2000 is now scheduled to ship sometime late this year, but pragmatic IT shops won't be touching it until much later than that.

That's the sound advice mega-consulting firm Gartner Group has been giving regarding Windows 2000. While Windows 2000 will bring the long-awaited — and much needed — Active Directory, which promises to help you better manage big NT nets, it also promises to be fraught with bugs and myriad implementation "gotchas." Do you really want to do this to yourself so soon after you've (hopefully) put the Year 2000 issue to bed?

Admit it. You don't. And you shouldn't.

The reasons are many, says Thomas Bittman, vice president of research and advisory services at Gartner:

- Windows 2000 is too expensive. The prices of computers may be going down, but the price of Windows software is heading up. For example, if you want to support four-way symmetric multiprocessing, you'll need Windows 2000 Advanced Server, which Bittman expects will cost roughly twice as much as the NT Standard Edition software that supports that capability.
- More than half of all users will fail to achieve the expected costs savings of a Windows 2000 implementation through 2001 because of the high costs of hiring, training and retaining employees, and bringing in outside help.
- Windows 2000 will not be reasonably stable and feature-complete until at least the first half of 2000. Additionally, it will be less reliable than Windows NT 4.0 until year-end 2001.

Those are just some of the highlights; Bittman and Gartner Group have many more reasons to be wary of Windows 2000. Bottom line, Bittman says: You should not deploy Windows 2000 at the desktop or as a midsize network operating system (NOS) until Microsoft delivers the "first major proven service pack." He expects that will be six to nine months after general availability of Windows 2000. For larger NOS deployments, Bittman recommends waiting a year.

E-mail management mania

With the proliferation of corporate Web sites has come a deluge of e-mail generated by those sites. And with that has come a rather huge problem: Who's going to read all these missives, never mind respond to them?

The answer has arrived in the form of e-mail management tools from the likes of Aditi, Brightware, eGain Communications, G2X Software, Kana Communications, Mustang Software and Silknet Software, to name a few.

To varying degrees, these software tools can read incoming e-mail, route mail to qualified customer service representatives based on subject matter, and even compose and send meaningful responses to some messages.

What's truly amazing about this technology is that it really works.

Using Brightware 3, Egghead.com is able to handle five times more e-mail with about half the staff it used to have, says Norman Hullinger, vice president of sales and operations for the online software retailer. With a staff that peaks at 15 people, and typically includes only 12 or 13, Egghead.com is able to field 900 to 1,100 messages daily.

Brightware answers 30% to 35% of those messages without human intervention, Hullinger says. Typically these are simple requests, such as questions about shipping policies to various states or countries. For more complicated queries, the software either composes a response that is then checked out by a human or it routes the incoming mail to the most appropriate customer service representative, depending on the content.

"This type of product is a must-have for any one with an active Web site," says David

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Continued from page 94

Cooperstein, research director for consumer electronic commerce at Forrester.

Ultimately, you can expect e-mail management products to get wrapped up in larger customer relationship management (CRM) systems. CRM tools track all interaction between a customer and a company, be it voice, phone, fax, snail mail or e-mail.

The CRM market is certainly much larger than e-mail management alone, although both have decent growth rates. Forrester expects customers to spend about $71 million on e-mail management products this year but $658 million in 2002. By contrast, last year users spent $1 billion on CRM products and Cooperstein expects spending to hit $3 billion by the year 2003.

PKI's time will come

In a word, public key infrastructure technology is confusing. There is much to know and lots to go wrong if you don't adequately determine all the angles. To date, that has scared away all but the most determined, or perhaps most desperate, users.

That will change, however, because it must. When you're talking about electronic transactions worth tens of thousands of dollars or more, you've got to have assurances that the people on each end of the transaction are who they say they are. And you've got to be able to prove, for example, that a $100,000 order for pin cushions placed on Sept. 27 was indeed placed on that day should either side try to renege. And it's nice to know that nobody has tampered with the order in transit, too.

PKI gives you all that, but it's not easy getting there. First, you've got to have a certificate authority, which doles out the private and public keys to various users. Messages are encrypted with the public portion of a user's key and decrypted with the private portion. Your public key is generally accessible to anyone who might need to send you an encrypted message, but the private key you pretty much guard with your life.

The public key is also known as a digital certificate. It carries information that positively identifies you to the party on the other end — the certificate authority makes sure of that.

All these components are available from vendors such as CyberTrust, a GTE company; Entrust Technologies; and VeriSign.

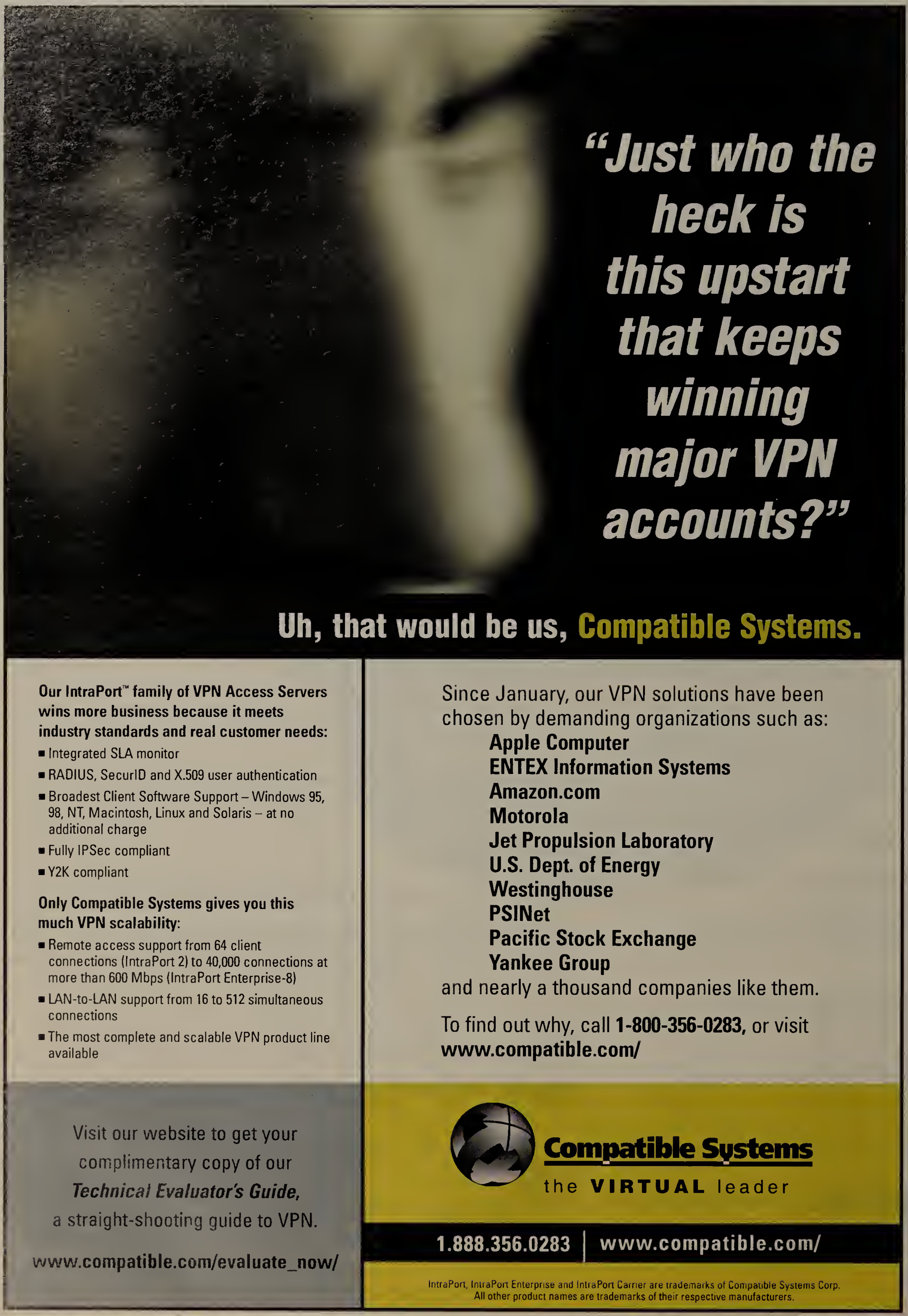
Among the sticky PKI issues in various stages of resolution are digital certificate management, integration of PKI components with back-end applications involved with transaction processing systems, standardization of keys and private key storage.

Key management is an especially challenging one. Certificate authorities generally keep revocation lists of bad digital certificates, but checking against those only assures you that the certificate hasn't been revoked yet; it doesn't give you any assurance that it won't be revoked tomorrow and that the party in question will be able to pay for whatever is being ordered. That leaves the certificate authority carrying a lot of risk.

But companies are springing up to address such issues. One is Identrus, a PKI service provider in New York. The company has enlisted a group of banks to help it build a "global trust organization" that will manage electronic transactions and assume the risk involved.

The launching of Identrus and other such companies, along with continued work on standardization and open programming interfaces to ease integration, will likely make PKI more accessible to the masses in the not-so-distant future.

Desmond, formerly Network World *features editor, is now vice president of King Content, a custom publishing company focusing on information technology. He can be reached at paul_desmond@king-content.com.*



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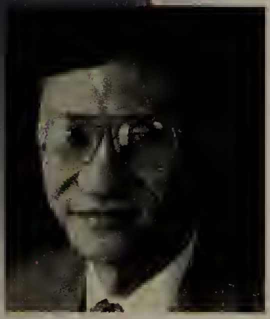

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Vice President/General Manager
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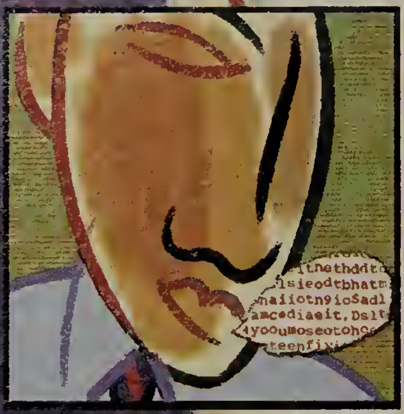

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President

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As networks turn inexorably toward ATM, circuit switched networks continue to expand in parallel. Network service providers will face the challenge of bridging these technologies in the new millennium. Eastern Research, whose narrowband crossconnect technologies anchor the current networks of many service providers, will augment these capabilities to provide cell access to circuit switched networks.

Bryant Dunetz

CEO

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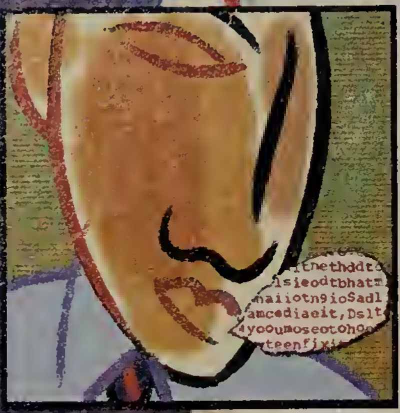

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President and CEO
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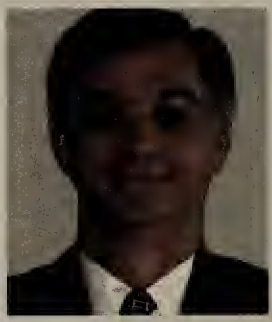

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President/CEO
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COUNTDOWN TO BUZZ-OFF

A LOOK AT THE ULTIMATE 1999 BUZZ — Y2K.

By Paul McNamara

Only 95 days, 10 hours, 26 minutes and 7 seconds left until You Know What.

Sorry. Make that 10 hours, 25 minutes and 58 seconds. . . . 57 . . . 56 . . . "Where did I put that emergency backup solar still?" . . . 52 . . . 51 . . . 50 . . . "Have you heard that the California National Guard is already on alert?" . . . 45 . . . 44 . . . 43 . . . "And that Hormel added a third shift?" . . . because so many people are stocking up on Spam?" . . . 37 . . . 36 . . . 35.

The countdown has begun in earnest, so get used to this kind of thing. As much press hype, public hysteria, silly overreactions and, yes, perfectly justified preparation that there has been so far regarding You Know What, you can be certain of this much: You ain't seen nothin' yet, especially Out There in the Real World where The Bug has taken on Godzillian proportions. Do not let your Y2K team's calm demeanor lull you into thinking that John and Julie Sixpack are taking this Year 2000 stuff in stride.

In fact, you had better strap yourself in for a Y2K buzz-a-thon these last few months before the millennium. Here's a preview what you *might* see:

October

The New York Stock Exchange hails successful completion of Y2K readiness testing. . . . Dow plunges 367 points on Internet chatter undercutting the claim as "government propaganda."

The National Football League announces that the traditional Roman numerals used to mark each Super Bowl will be replaced by four-digit dates starting this January.

Internet World conference attendees in New York hear a keynote address from Bill Gates titled: "You Can't Blame Microsoft For This Mess."

Turner Broadcasting System launches a 24-hour-a-day Year 2000 channel featuring live news updates on the half-hour and programs such as "This Old Bomb Shelter" and "Keeping Those Unprepared Neighbors At Bay."

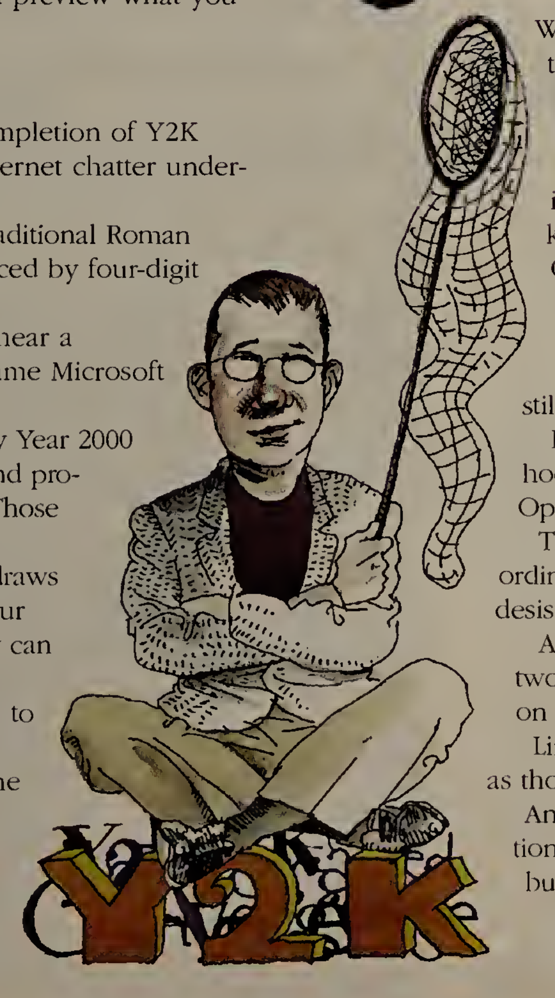
A rock concert to benefit homeless Y2K survivalists draws 103,000 at the University of Michigan. "We can't leave our brothers and sisters to bloody fend for themselves, now can we?" U2's Bono tells the throng.

In his weekly radio address, President Clinton tries to reassure Americans that flying Jan. 1 will be safe by pledging: "Hillary herself will be aboard Air Force One when the clock strikes midnight."

In large part because of a McDonald's promotional giveaway, Year 2000 "Bug" tops list of favorite Halloween costumes in Gallup survey.

Signature

SIGN-OFF



November

The head of WeFixY2K.com tells a *BusinessWeek* interviewer that his start-up's exit strategy "is really quite simple: an island in Fiji."

A spokesman for the American Bar Association calls recently enacted legislation limiting Year 2000-related lawsuits "the greatest injustice this country has seen since the O.J. trial."

Microsoft issues a Y2K patch for still-unreleased Windows 2000 and promises that the operating system it supposedly fixes will ship "early in the new millennium."

Dusting off a page from their antinuclear playbooks, voters in Cambridge, Mass., approve a ballot question declaring their city a "Year 2000 Bug-Free Zone."

A scuffle breaks out between members of a Year 2000 survivalists' organization and Maine environmentalists over the latters' attempts to block expansion plans by the Poland Springs bottled water company.

Former USWeb CEO Joe Firmage posts a report on his UFO-monitoring site blaming the Year 2000 problem on "alien Cobol programmers in cahoots with the CIA."

A pall falls over Thanksgiving dinner tables after widespread hording by Y2K survivalists causes a cranberry shortage.

Home Depot ad reads: "36 Shopping Days Until The Lights Go Out."

Otis Elevator issues a press release denying that it has circulated an internal memo ordering employees to "plan on telecommuting come January . . . or get used to walking those stairs."

December

Congress declares Dec. 5-11 Year 2000 Preparedness Week, ending 45 days of debate over an amendment to the bill that would have also outlawed flag burning.

"Y2Kill-Kill-Kill" — a slice-and-dice flick about a geek gone berserk — opens to packed movie theaters.

A sleigh manufacturer issues a press release debunking an Internet rumor that the Year 2000 glitch could keep Santa grounded next week. The "Free the Reindeer Coalition" admits starting the rumor.

Latest Gallup Poll shows 11% of American teens still believe Y2K is a rap artist.

Microsoft issues a new patch for its Y2K patch for the still-unreleased Windows 2000 operating system.

Las Vegas oddsmakers begin taking bets on the likelihood of The Strip going dark when the millennium dawns. Opening odds: 2-to-1 against.

The city council in Jackson, Miss., passes an emergency ordinance ordering "all New Year's Eve parties to cease and desist by 11 p.m. so as to keep streets clear of traffic."

A bank in rural Wyoming padlocks its doors after some two dozen of its 132 depositors close their accounts based on the advice of a radio talk-show host.

Lines at ATM machines are reported to be almost as long as those for a record $150 million Big Game lottery jackpot.

An $8 bottle of champagne fetches $1,250 on an eBay auction . . . and the media still mistakenly thinks that this run on bubbly has something to do with two-digit date fields.

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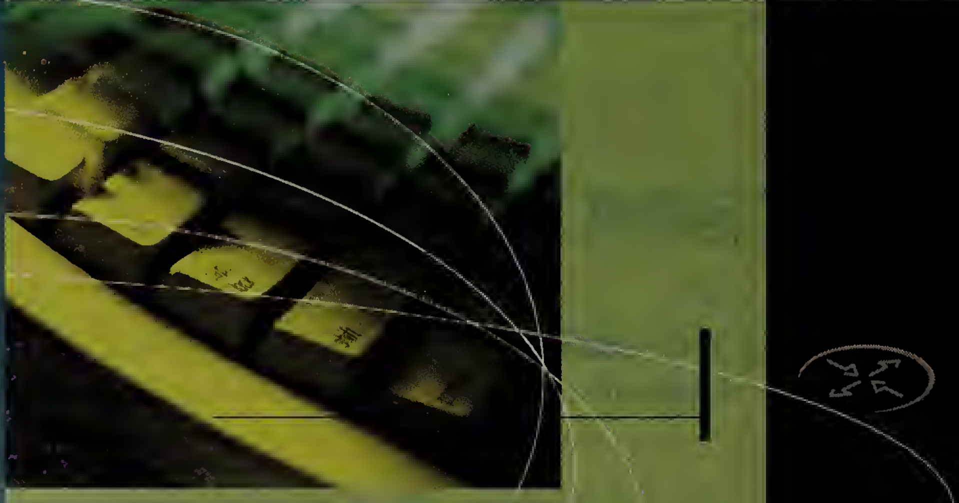

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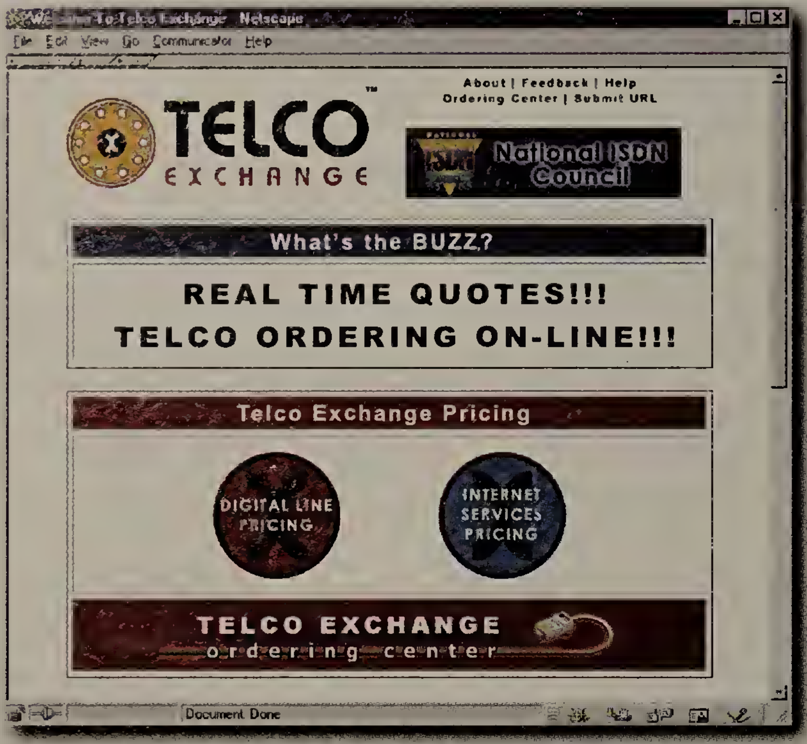
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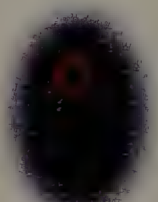

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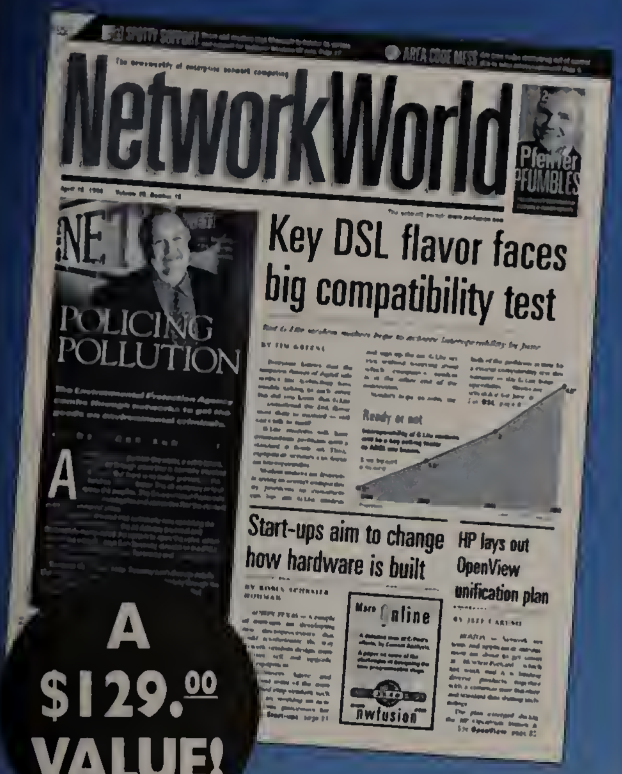
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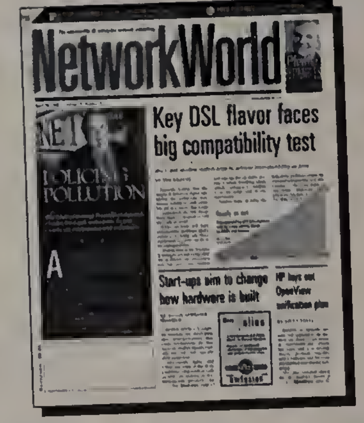
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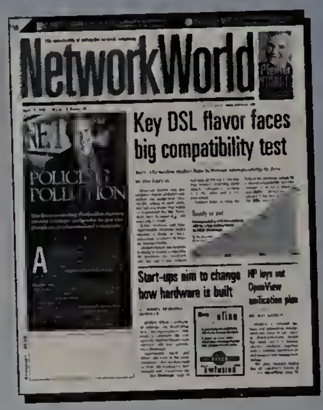
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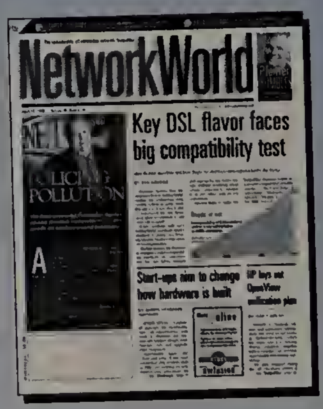
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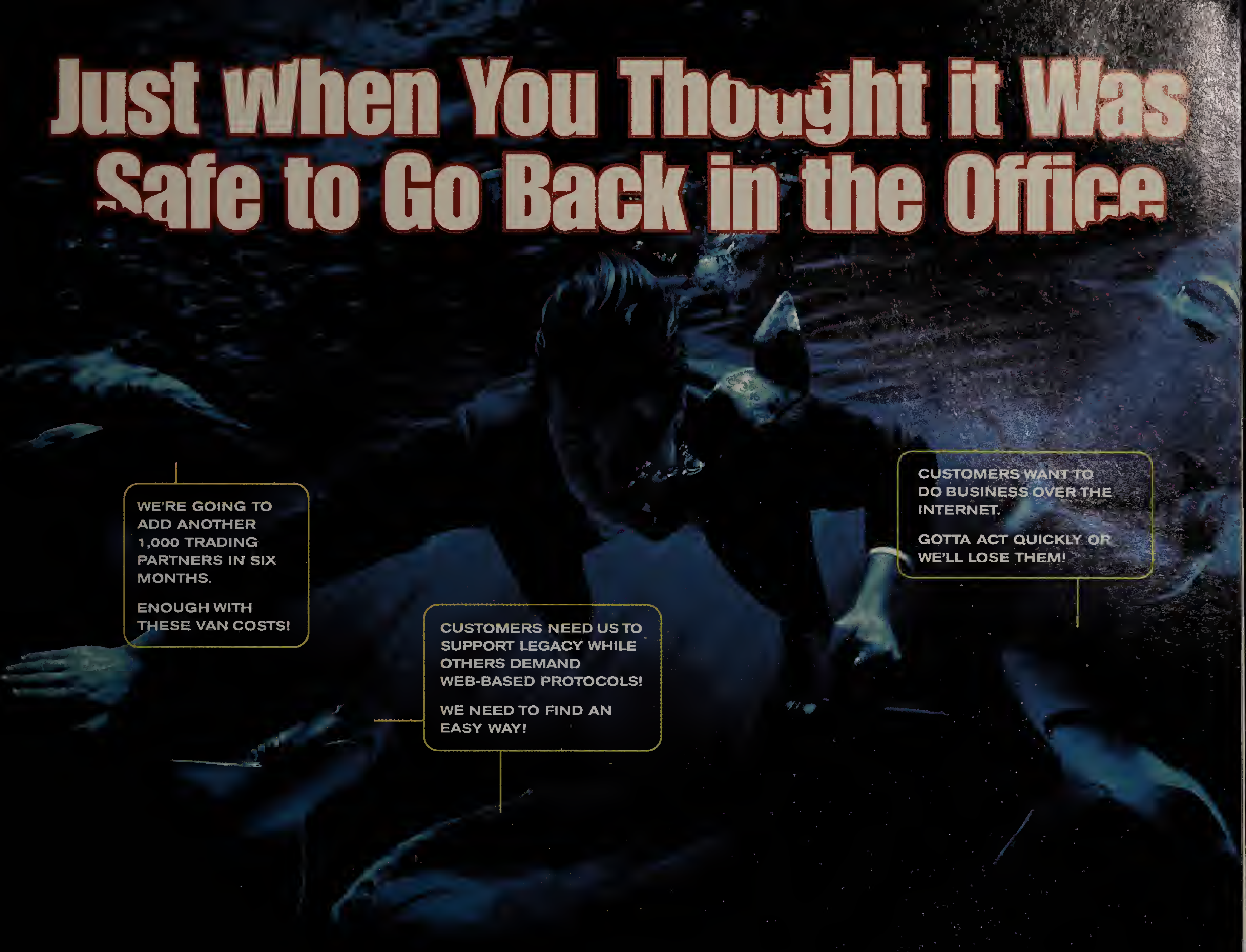
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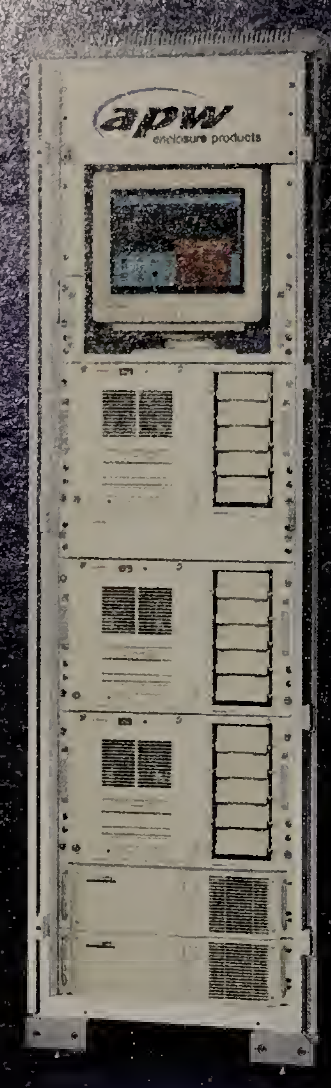

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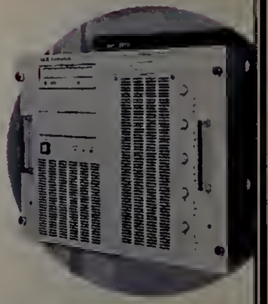

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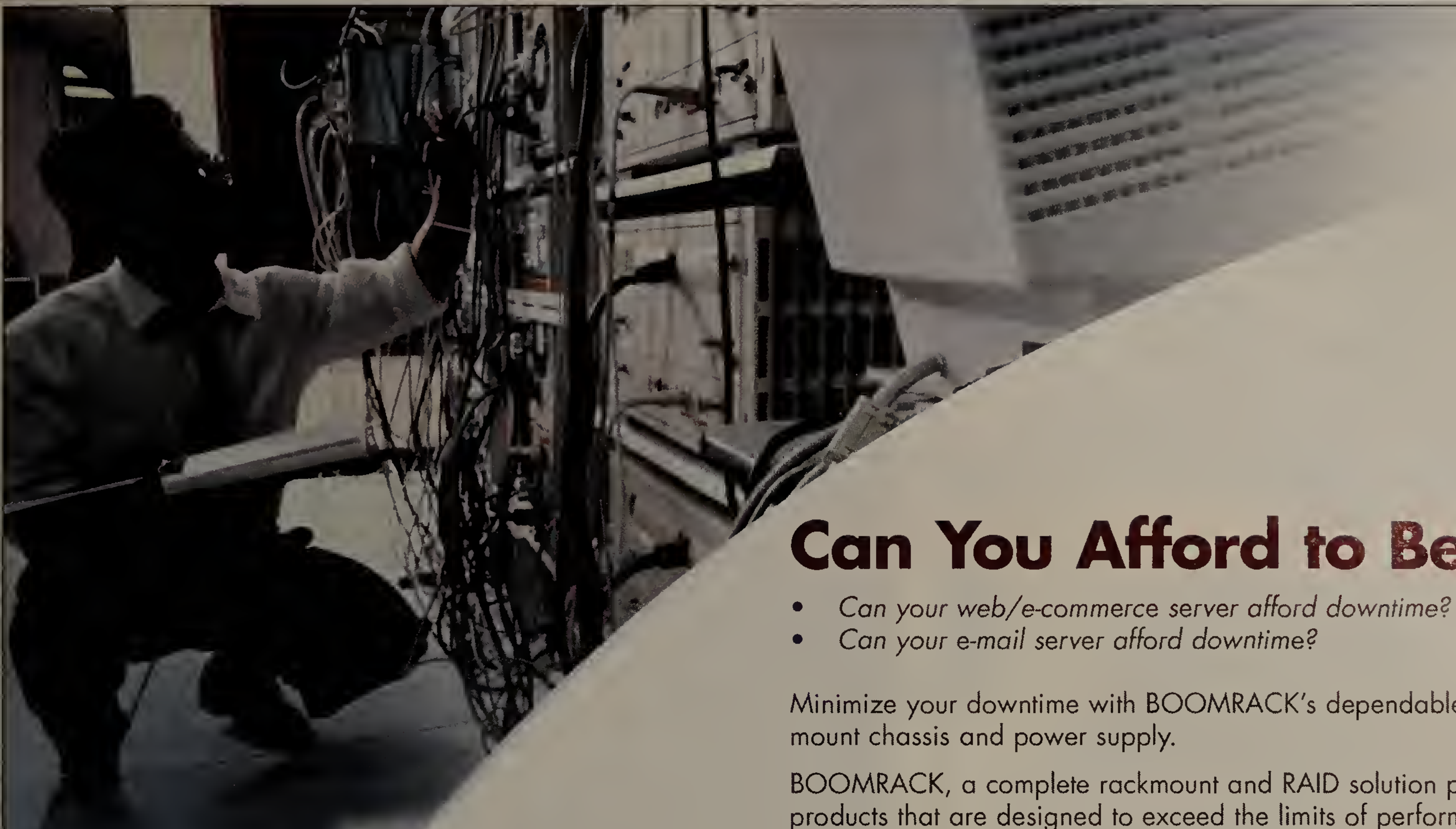

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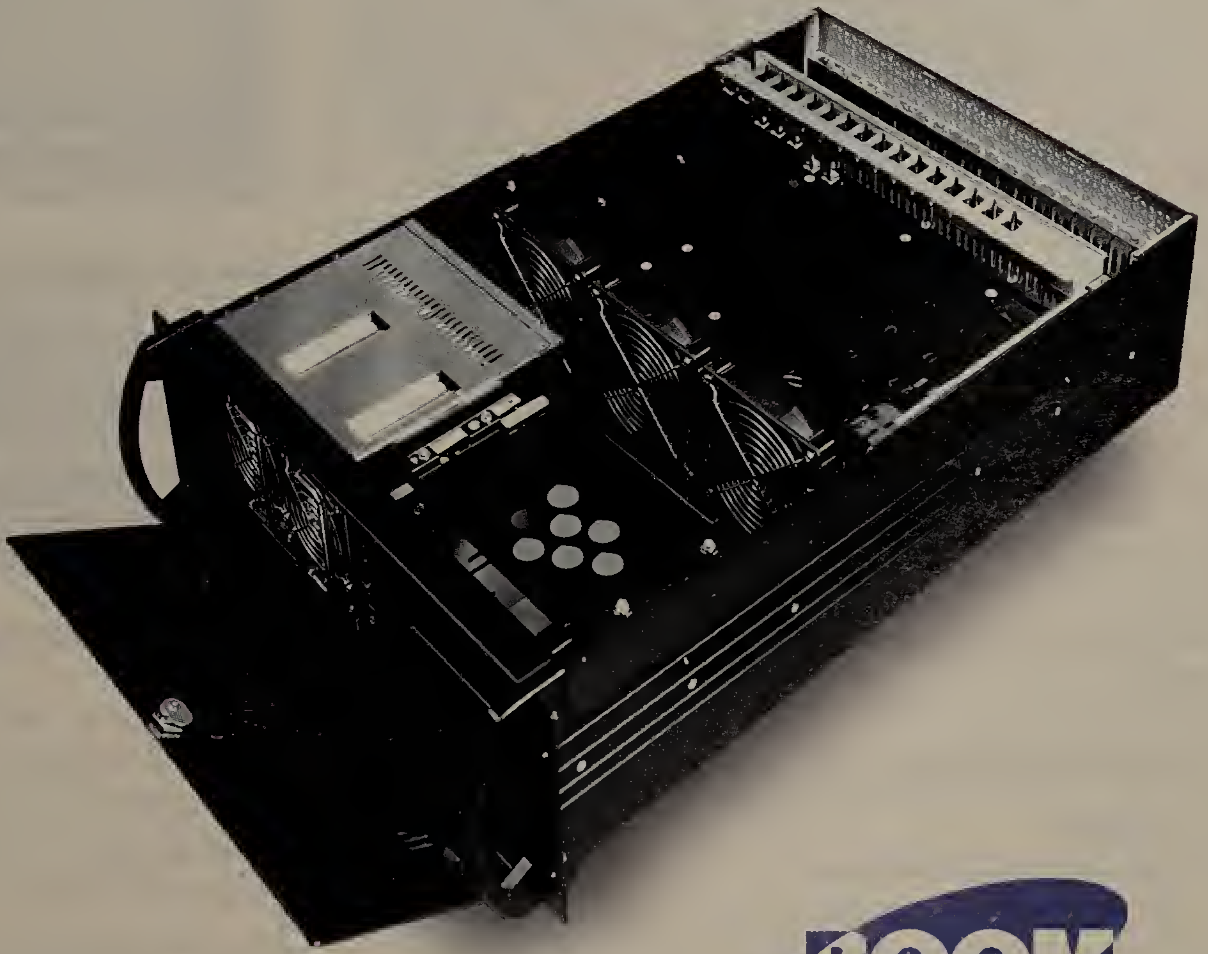

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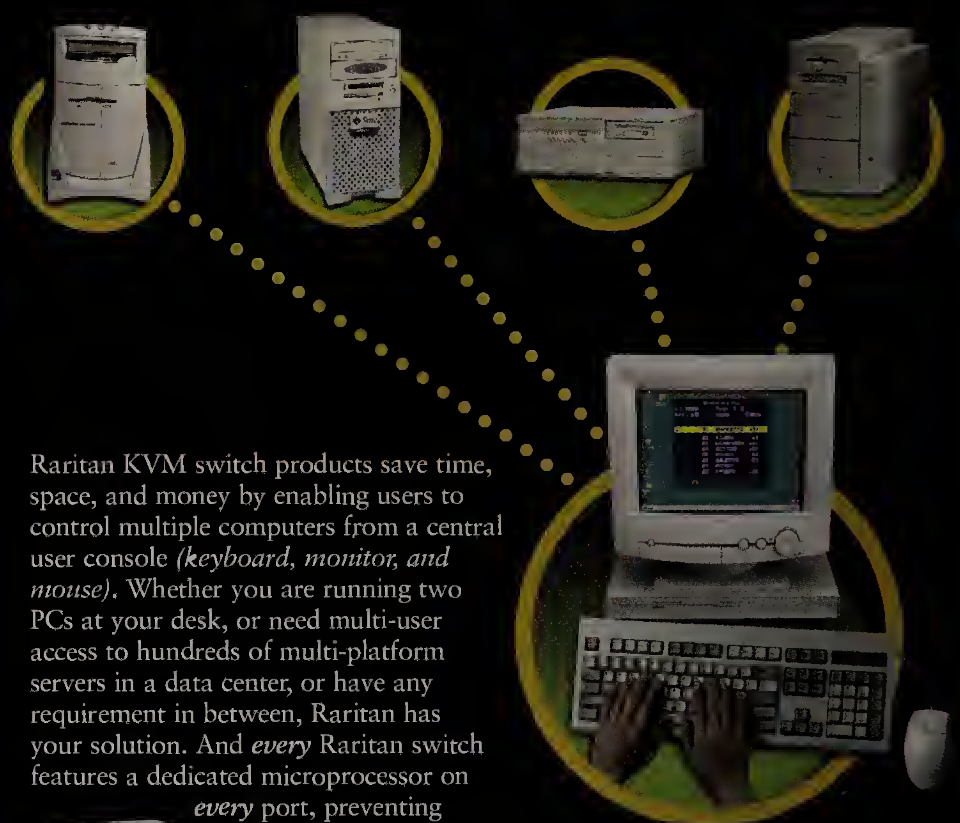

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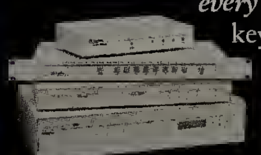

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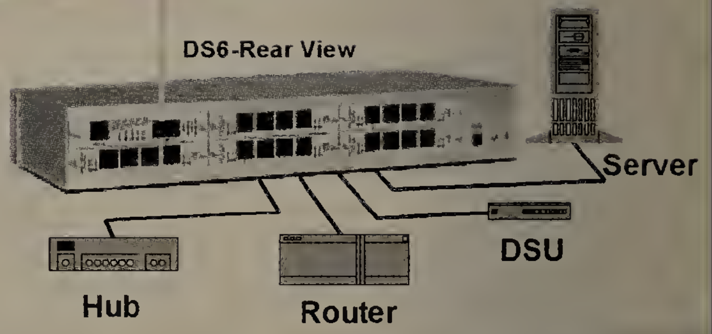

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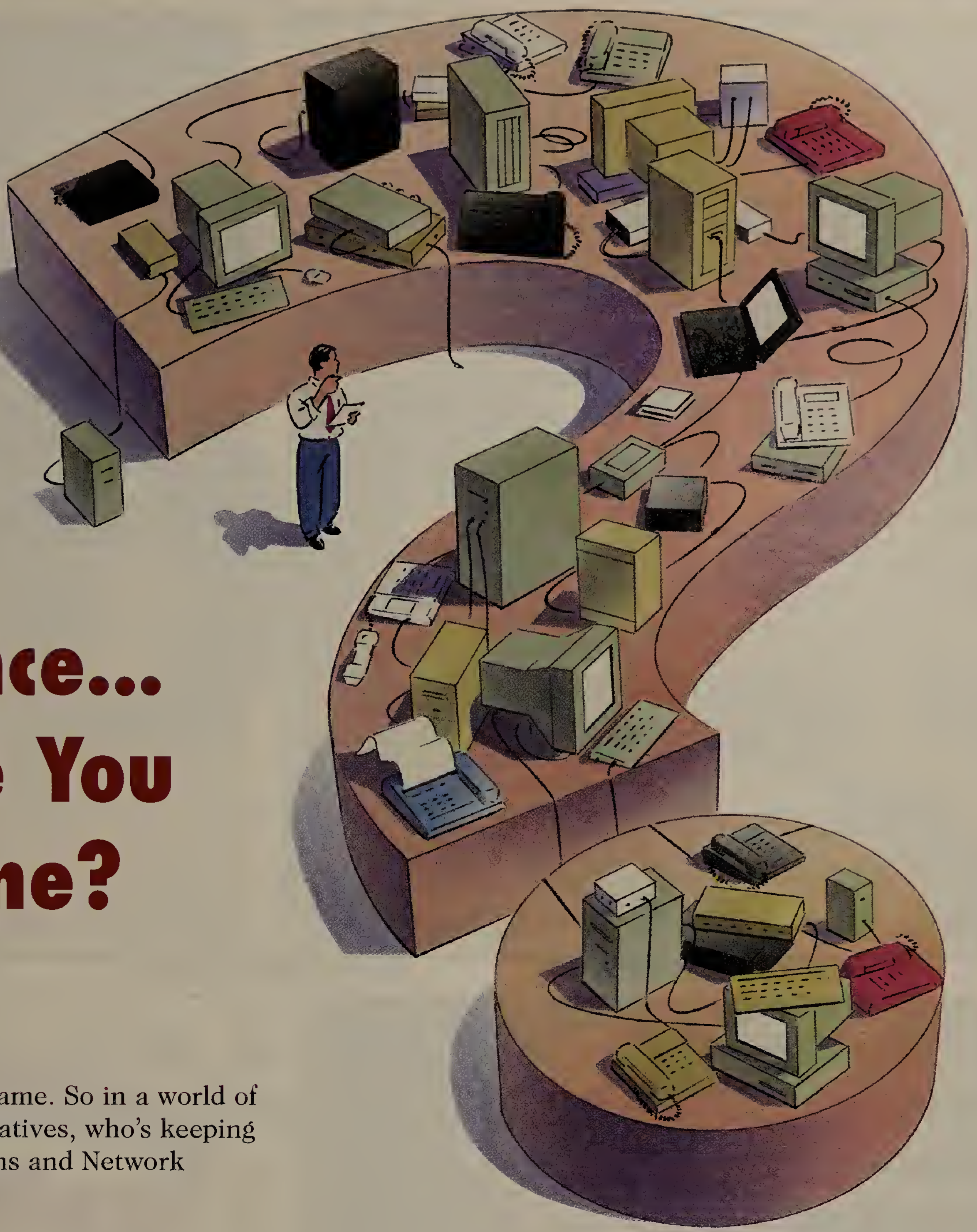

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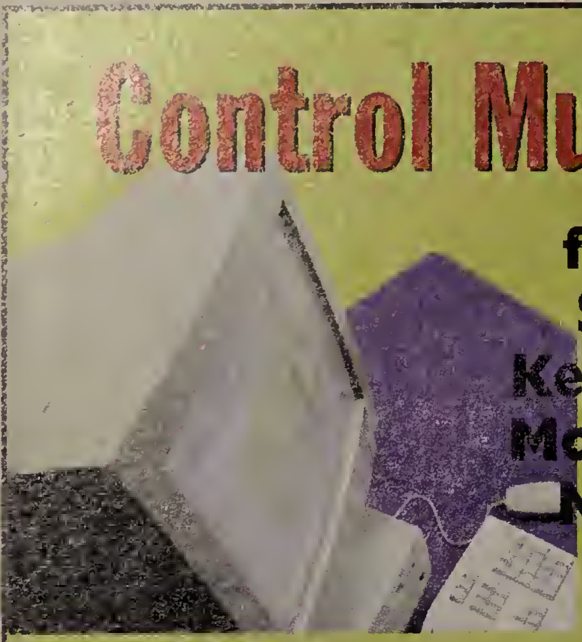

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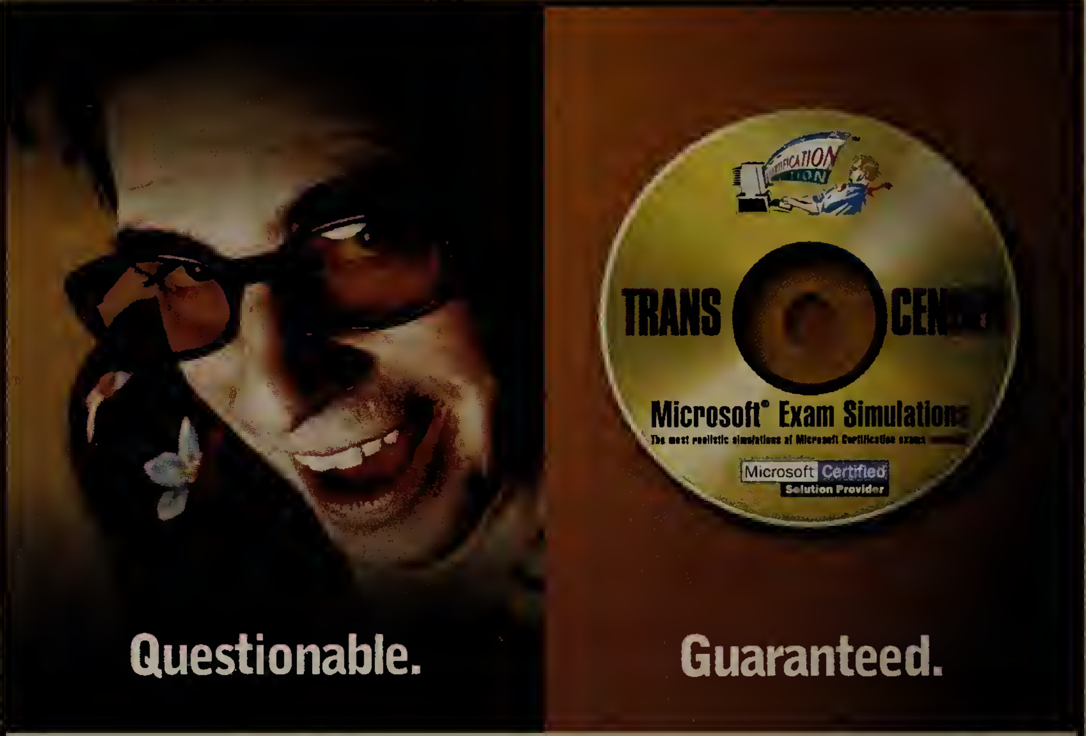
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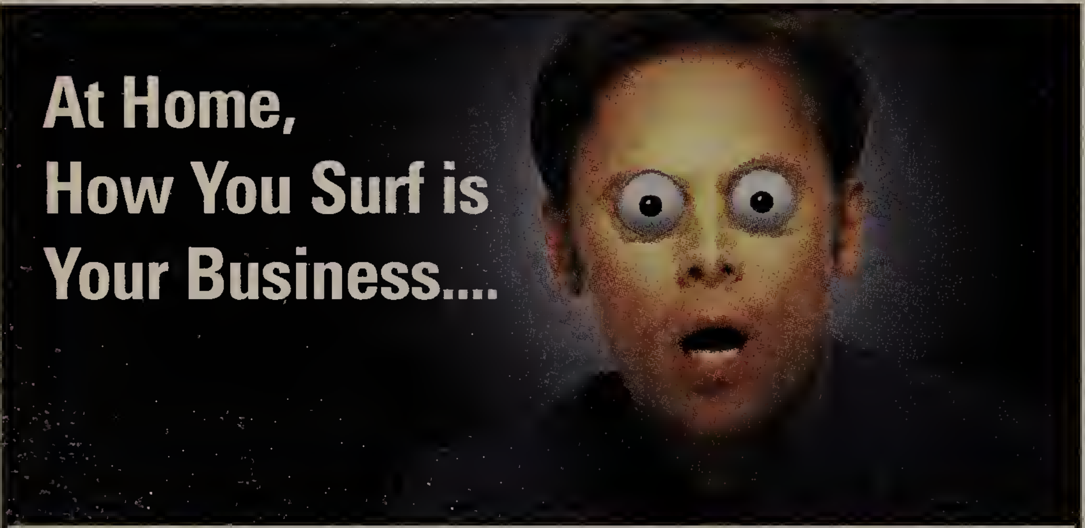

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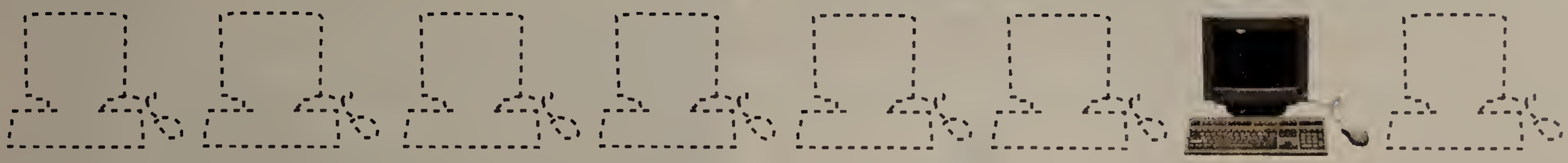

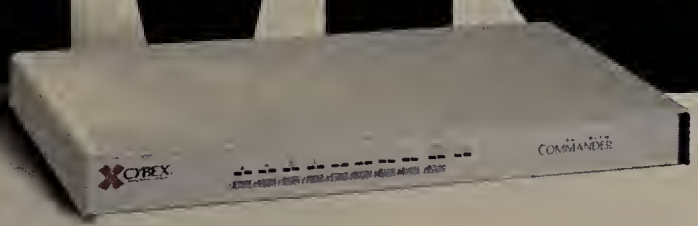

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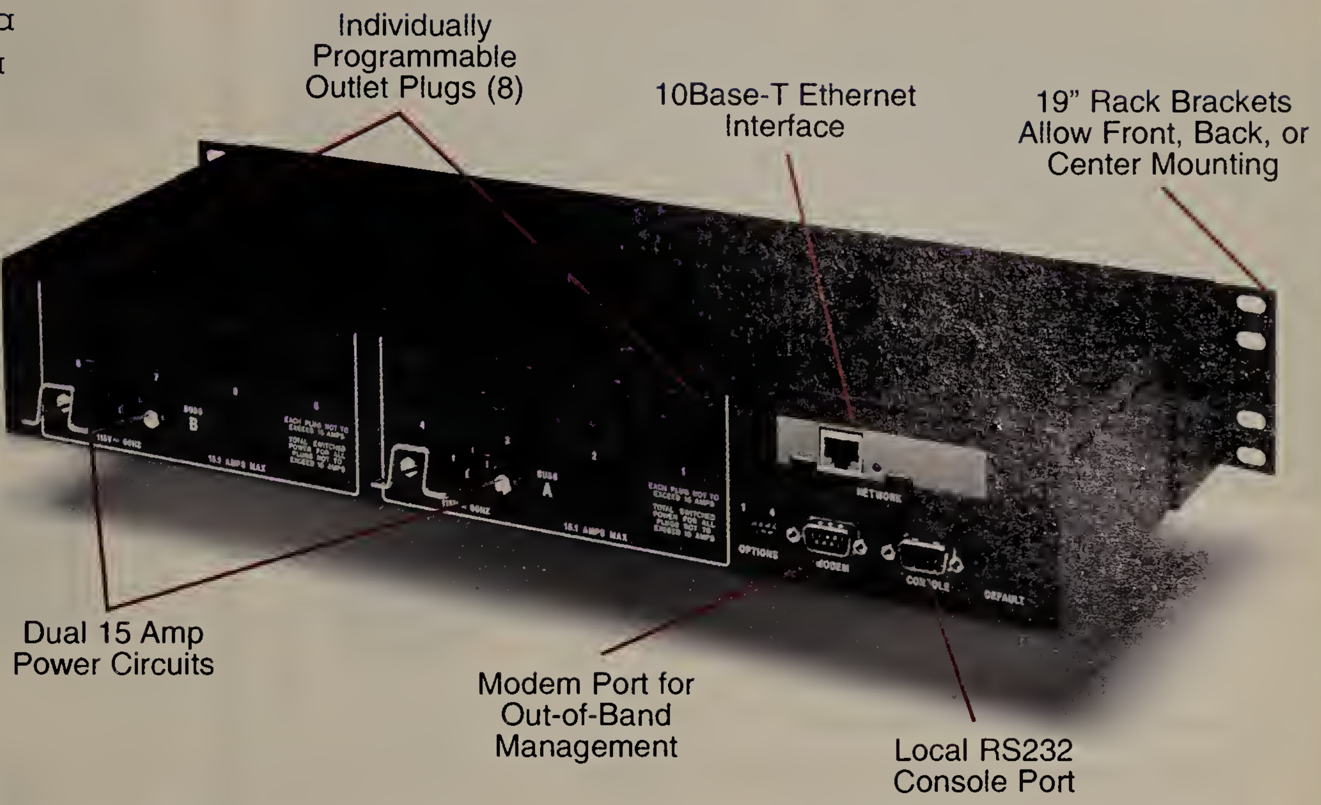
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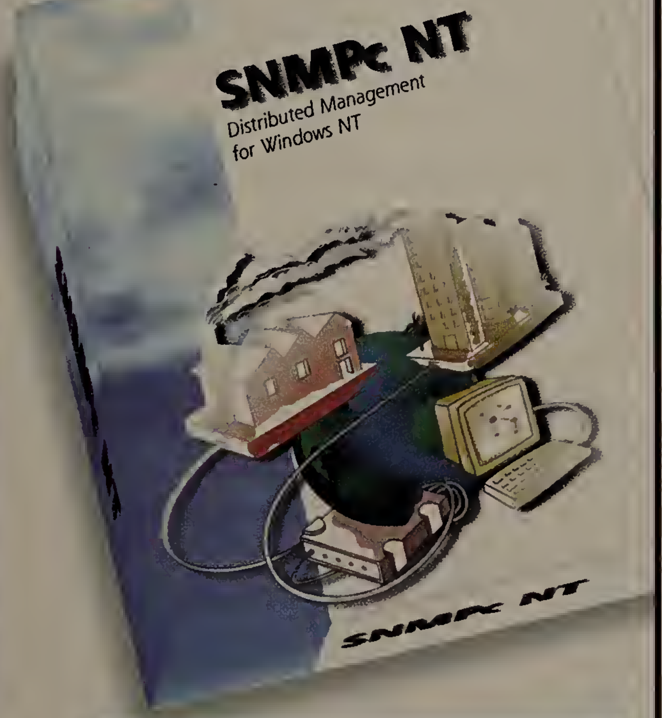

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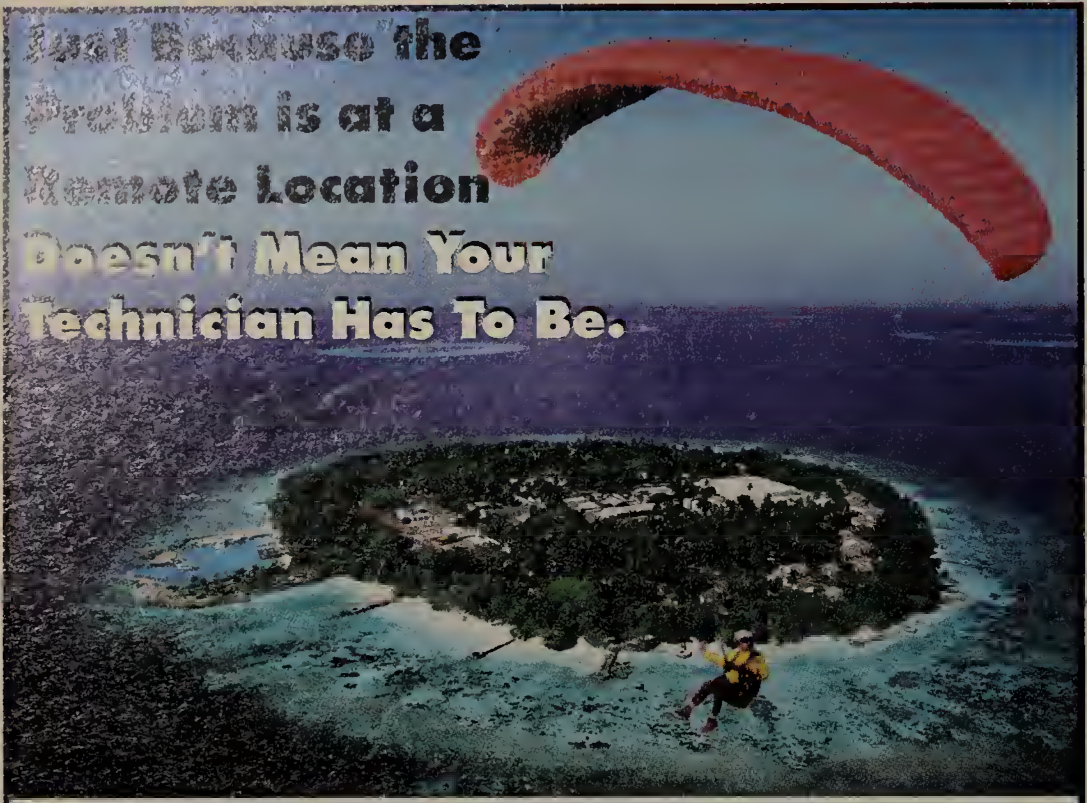
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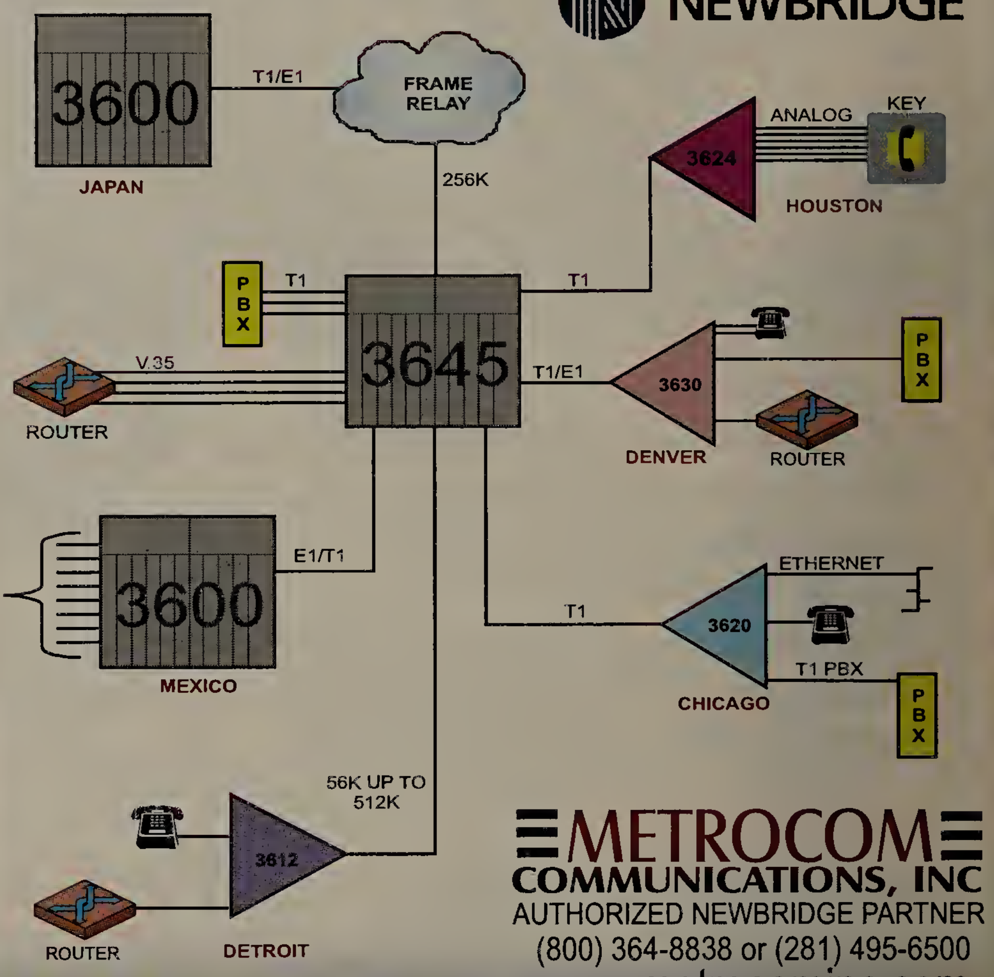

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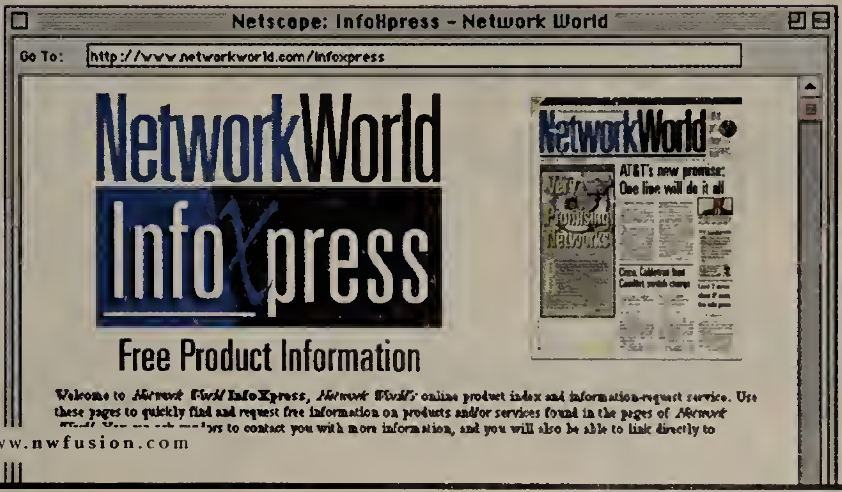
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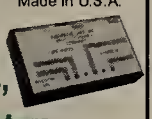

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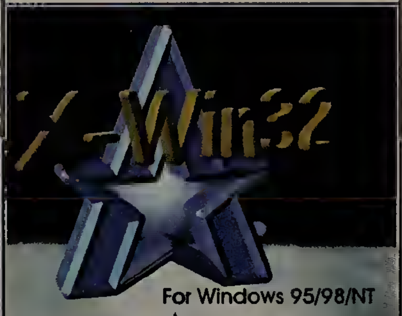

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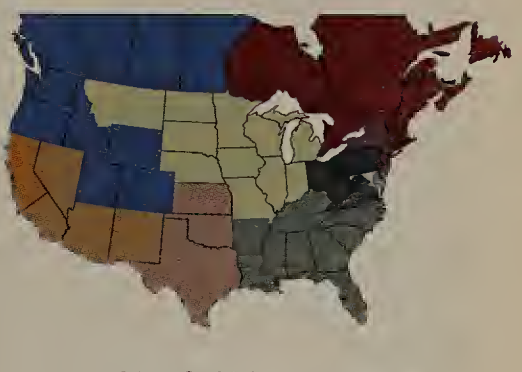

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SOCKS,
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can't collaborate," says Mark Slater, an account executive for Marketstar. He calls the problem "a big issue that needs to be resolved."

SOCKS V5 resolves that issue by providing user authentication for a host of Internet protocols including H.323 videoconferencing and RealAudio. (See The Scoop, this page.) SOCKS V5 is not only flexible in that it supports multiple protocols, but it's also powerful, giving network managers a great deal of control over traffic.

"What is driving all of the interest in SOCKS is the need to have a much higher degree of intelligence in firewall and border control products," NEC's Jang says. "SOCKS V5 lets you set who can go to the 'Net and use what application and what type of authentication they'll need."

Sorenson Vision, a multimedia vendor in Logan, Utah, received complaints from enterprise customers who wanted to conduct videoconferences over the Internet but ran into problems with their firewalls and network address translation (NAT) devices. So Sorenson Vision embarked on a year-long research project to find a way to secure EnVision traffic over the Internet. The company's engineers found two options: write a proprietary proxy server or use SOCKS V5.

"The best solution was SOCKS," says Mark Fallentine, a security architect with Sorenson Vision. "We can't have a solution for every NAT and firewall. We wanted a solution to work with all of them."

Still, SOCKS V5 is not a panacea for multimedia security. In addition to the SOCKS V5 server software, clients must have SOCKS V5 software installed, and applications must be "socksified." Getting SOCKS V5 to work with emerging Internet applications such as RealAudio isn't as simple as plug and play, developers say.

"Multimedia applications still carry enough proprietary stuff in them that we need to tweak the SOCKS V5 server to support them," says Frederic Martin, the product line manager for Novell's BorderManager firewall, which supports SOCKS V4 and V5.

"SOCKS isn't the right solution for every problem that exists with multimedia," says Marc Van Heyningen, Internet security architect for Aventail, an extranet vendor in Seattle. He says some observers predict that the IP Security standard will eventually replace SOCKS V5 for securing multimedia applications, but he sees a role for both protocols.

For now, SOCKS V5 is good enough for Wireless One, a Jackson, Miss., ISP that uses the SOCKS V5 feature of Novell's BorderManager to grant a handful of top executives the ability to receive RealAudio streams. "We can allow or deny access to just about any protocol or application by user or IP address," says John Cressman, network communications manager for Wireless One.

Meanwhile, HP uses the protocol to support audio streaming on its employee Web site. HP uses its own SOCKS V5-compliant Praesidium Extranet VPN to handle the traffic.

"We just open up one port in the firewall for streaming audio and data," says Narayan Makaram, a senior technical consultant with HP's Internet Security Division. "SOCKS is making that possible." ◼

SBC,
continued from page 7

telecom consultancy in Boston. "The RBOCs' intrinsic nature is to not want anyone else in their [switching offices]," Bacco says.

But withholding evidence and providing uninformed witnesses is over the top. "This is the first time I've seen anything so blatant," she says.

RBOCs vary in how cooperative they are, according to Ken Chao, vice president of legal strategy for Covad. And sometimes they soften after initially digging in their heels.

For example, Covad struggled to forge its interconnection agreements with US West in Washington and Oregon. But after that, Covad was able to negotiate with US West for a blanket agreement in the other 12 states in which the Bell operates, Chao says.

Covad has filed for arbitrations in states other than Texas, but this is the first time an RBOC failed to settle with Covad before arbitration started.

RBOC delays can cripple start-up competitors that lack the financial resources of the Bells, Holland says. "They've frustrated competition for a period of time and bled competitors with legal fees," he says.

In the Texas case, the sanctions are meant to reimburse Covad and Rhythms for the extra legal fees they had to pay because SBC's actions dragged out a hearing on interconnecting SBC's network with those of the DSL providers.

In addition, a mysterious e-mail presented by SBC as evidence during the arbitration — one that is now being kept secret — apparently indicates that an SBC attorney directed 81 other employees to commit fraud in relation to the case, according to the commission ruling.

SBC will not comment on the content of the e-mail, claiming it is privileged, client-attorney information. The company told the PUC that withholding other documents was an oversight, and the company did not address why it sent unqualified witnesses.

The e-mail has Rep. Bliley worried that SBC might not be complying with the Telecommunications Act of 1996, which requires that RBOCs negotiate in good faith with any carriers seeking to interconnect. Bliley demanded that SBC's Whitacre turn over the e-mail by last Monday, but Whitacre declined. ◼

More Online
- Details of SBC's battles with rivals over its proposed merger with Ameritech.
- A look at how impending FCC rules could expand the DSL market.

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The Scoop

The news behind the news

HOW SOCKS FITS

SOCKS is a general-purpose proxy protocol for client/server environments. A SOCKS system has two components: server software and client software. The SOCKS client is available on Windows and Windows NT, while the SOCKS server is available on NT and all major Unix platforms.

As a proxy server, SOCKS makes a connection between a client and an application server and relays data between them. From the application server's perspective, the SOCKS server is the client, thereby hiding the real client. The SOCKS server, which can be used as a firewall alternative, provides a single point of access for external traffic.

One advantage of SOCKS is that it can handle the proxy function for other protocols such as HTTP, FTP and telnet. Otherwise, the applications each need their own application-level proxy, which slows network performance and increases management requirements. The disadvantage of SOCKS is that it requires software to be installed on the client and server, and the application must support SOCKS, too.

Two versions of the SOCKS protocol exist: V4 and V5. V4 handles connection requests, sets up a proxy, and relays data to and from the application server.

V5 adds user authentication and support for User Datagram Protocol (UDP) traffic, which is used in multimedia applications. V5 was accepted as a standard by the Internet Engineering Task Force (IETF). Meanwhile, an IETF working group is starting to look at SOCKS V6, which is likely to include enhancements for handling multicast traffic.

Without SOCKS V5, it is difficult for network managers to support multimedia applications through firewalls. There are two choices: open the firewall ports to allow multimedia applications through, which puts an organization's data at risk; or put a server outside the firewall to support multimedia applications, but then those applications are not secure.

SOCKS V5 provides a way to run multimedia applications through the firewall. It does this by granting network managers a great deal of control over the multimedia traffic they let through an open port on a firewall. SOCKS V5 lets users select who can receive a multimedia communication and for how long, while protecting the rest of the information on the network.

— Carolyn Duffy Marsan

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Tool from start-up to unlock net directory data

BY DENI CONNOR

AUSTIN, TEXAS — Software from an Austin, Texas, start-up will soon let network managers without programming skills transform directory information into business applications.

Visual Click Software's application development tool, dubbed click:Vision Manager, will let users create applications from information that is often not readily available to nonprogrammers.

Founded in May, the company is debuting software for NetWare that lets a net manager click on NetWare directory information and drag and drop it into position to create applications for NetWare. For example, net managers could write applications to find out which users have too many access rights, generate company telephone lists or easily migrate directory data from NetWare to Windows NT.

The software will be followed by a release that works with Windows NT and Windows 2000 Active Directory information.

Click:Vision Manager will allow the use of a variety of information maintained by the network operating system. For instance, in NetWare users will be able to monitor how well the network is operating or troubleshoot user problems by tapping into the performance data and statistics that NetWare keeps.

PROFILE: VISUAL CLICK SOFTWARE

Founded:	May 1999.
Product description:	Application development tool for network managers.
Founders:	John McCann, president; Steve Garms, vice president.
Founders' backgrounds:	Independent NetWare and Windows NT utility developers.
Funding:	Private.
Funding amount:	Not available.
Web site:	www.visualclick.com

John McCann, president and co-founder of Visual Click, claims that NetWare's NDSAdmin and ConsoleOne utilities do not let net managers access and make use of all the information contained in the directory. This restricts net managers without programming knowledge and familiarity with Novell's APIs and function calls.

Click:Vision Manager transforms the same NetWare APIs and function calls into components that execute an action. For instance, a network manager could create an application for department administrators that allows them to change passwords for each user in the company, without giving them access to all the other features of NWAdmin.

McCann, using traditional programming techniques, wrote such a program in eight hours for a customer. Using click:Vision Manager, McCann could write such a program in about three minutes.

Bob Markham, senior network architect for the American Red Cross in Washington, D.C., was a click:Vision Manager beta tester. Markham is using the tool to build applications for his network, which serves 30,000 full-time users and more than one million volunteers. "I need to create software that is immediately intuitive and easy to use because I have a high number of volunteers that are not trained on using the network," Markham says. He also expects he will be able to give click:Vision Manager to his network administrators and others so they can develop applications.

Click:Vision Manager will be available in November at a price of $595 per server; a Windows NT release will follow in March 2000.

Visual Click: www.visualclick.com

Oracle's portlets trim intranets

BY JOHN COX

REDWOOD SHORES, CALIF. — If your corporate intranet is growing out of control and users are getting lost in a thicket of information, Oracle wants to sell you the equivalent of a weed-whacker.

Unveiled last week, the Oracle Portal Framework is designed to let IT groups reduce the clutter on their corporate nets. The Framework includes a set of Java components, known as classes, which Web developers can use to create a single view of all information on their intranets and selected information from the public Internet.

Oracle calls the reusable classes portlets because they're used to create a corporate portal — a primary Web page that users log on to in order to find a range of Web-based information and services. When users click on a portal icon, they connect to a server-based portlet, which serves up a particular sales report, order status, product promotion or similar information.

The Framework includes a software development kit, as well as some server code that creates a set of services used by the portlets, such as connecting to a directory service or to a preformatted database query. The Framework will be incorporated into the upcoming Oracle WebDB 3.0, a tool set for creating active HTML pages — those that can access a back-end database, run a query and return the results as a Web document.

The Framework also includes tools that let developers tailor the view for each user or group of users. The portal simplifies users' access, and the tailoring helps them grab the information they need most. For example, salesmen and production line workers will both see a companywide press release, but only the salesmen will see the latest sales data.

Oracle will use the Framework to build a set of ready-to-run portlets for its Oracle Applications suite of business software, says Jeremy Burton, an Oracle vice president. Web developers can simply add portlets to their portal sites to give users access to customer data, order status and the like. Other portlets will let users access data on other vendors' applications. Finally, Oracle will rework tools such as Oracle Reports and Oracle Discover so these, too, will create a report or an analysis as a portlet.

The full details of the Oracle Portal Framework will be unveiled in October. WebDB 3.0 will start beta testing in November. Pricing has not been decided.

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Backspin

Those the gods would punish

"Not only is there no god, but try getting technical support on a Sunday."

— The quote as it should have been said by Woody Allen.

MARK GIBBS

Well, a couple weeks ago I was at Interop, and I'm still trying to catch up. Leave the office for a week and it all goes to hell. I think the gods have it in for me. I must have done something wrong in a previous life and they flipped a coin — heads, reincarnated as a moth in a strobe light factory, tails, a human in the network industry.

Anyway, Interop — what a mixed bag. Attendance seemed low but several vendors told me that they were getting very high-quality leads. The *Network World* party was good, and I interviewed lots of interesting industry executives on Network World Live Television, as well as a dog and a "booth babe" (we discussed the best choice of makeup for show attendees).

Another event that was great fun was the "Crystal Ball Panel: Peering into your networked future," a panel of *Network World* columnists chaired by *Network World's* dynamic online editor, Sandra Gittlen. On the panel were Danny "Have you seen my new book" Briere (it is called "Smart Homes for Dummies" and its only failing is that it doesn't have anything to say about knob and tube wiring — see *Gearhead*, Sept. 20), Dave Kearns, David Rohde, Steve Blass and yours truly. We each made a statement about the future and then stood back and took the flak from our fellow panelists and the audience. Good clean entertainment and no one lost an eye.

The show itself was more or less the same show as the spring version.

Quality of service, service-level agreements and (gods help us) convergence were trotted out as primary concerns by every other vendor I spoke with, and I now start to twitch at the merest hint of scalability. I gag at "carrier-class," shudder at the mention of "cost-effective," and feel nauseated by "groundbreaking." I abhor "modular," "scalable" and "flexible," and sneer at "market leader," "investment protection" and "highly redundant." And I cannot hear "state of the art" or "next generation" without feeling the impulse to lash out violently.

So let me offer a template for all vendors who want to do a product press release that covers all the bases:

[City, State] Date. [company name], the leading [vendor/supplier/your choice], announces [product], which gives [consumers/network managers/go-go dancers] a unique [strategic platform/scalable solution]. This [paradigm shifting/convergence] [product/service] revolutionizes [whatever it does] and ensures [investment protection/scalability/redundancy]. For more details see our Web site at www.somewhere.com, where we will make sure you can't find the pricing even if we have got around to putting up product details, or call Trinket Knowsnothing, who knows nothing but will happily say any crud that comes into her head and when you respond with "I don't understand what you're saying" will confess that she's been on the job for two days, having been promoted from the mail room, and that English is her second language but if you speak Latvian she could help you and anyway you really need to speak to Bob but he's on another call or perhaps run amok in the coffee room with a blunt spoon screaming, "I can't stand this business and I'm not going to take it anymore," but she'll make sure he gets back to you before the year is out. Oh, and the product will be available in the third quarter.

Ah, that feels better. This is one of the things I love about being a columnist — it is so therapeutic. I can express my angst and spleen and that of a large portion of the readership. But back to catching up. One thing I'm sure of is that I'll never die — I'm too far behind.

Show it all to nwcolumn@gibbs.com

'NET BUZZ

The latest on the Internet/intranet industry

PAUL MCNAMARA

The Internet needs this Patrick Naughton scandal like the Carolinas need more rain.

In case you missed the news, Naughton is the 34-year-old high-ranking **Infoseek** executive and former **Sun/Java visionary** charged with using an Internet chat room to arrange a sexual encounter with someone he believed to be a 13-year-old girl. Turns out that Naughton's keyboard pal was really a male FBI agent, and this led to his arrest on federal charges. And seemingly before the ink was dry on the guy's fingerprints, Infoseek had canned his sorry butt.

OK, let's not forget to grant the alleged pervert his presumption of innocence. This multimillionaire's lawyers and shrinks are probably working overtime to fashion the story of how Naughton was the real victim here — entrapment, job stress, he recently rented "Lolita"; pick your favorite cop-out. . . . He'll get his day in court.

The same cannot be said for the Internet, however. Naughton is now the poster child for what has become — thanks in part to mainstream media histrionics — the public's most feared Internet bogeyman: sexual predators. Every politician worth his soapbox and every moralizing do-gooder worth her high horse can be expected to use naughty Mr. Naughton as proof positive that the 'Net is evil.

One can only imagine the "remedies" that will ensue. . . . By the time they're done, we'll all have to provide DNA samples before logging on.

"Project T-Rex" has gone the way of the dinosaurs. What was the code name for a new venture capital firm featuring six heavy hitters from Brentwood Venture Capital and Institutional Venture Partners has been replaced with a more suitable moniker: Redpoint.

Which means what?

According to Rock Climbing, a guidebook published by W.W. Norton, the definition includes: "To climb a route from the ground up without falling or resting on gear."

Internet entrepreneurs will relate: After all, you can't rest on yesterday's gear when building the broadband infrastructure of tomorrow.

The Redpoint partners include **Jeff Brody, Tom Dyal, Tim Haley, Brad Jones, John Walecka** and **Geoff Yang.** Their first investment from what will be about a $500 million fund has gone to **Reflect.com,** described as "a Web-based, customized beauty business."

One must look his best while rappelling down those cliff faces.

Two weeks ago in this space Buzz treated the **Pets.com** business model like a puppy does a chew toy — "pure bow-wow" was the most telling phrase. However, I did have nice things to say about the Internet start-up's TV ads, which feature an amusing hand puppet.

Well, I'd like to take back those nice things. According to 'Net Buzz reader **Jordan Beisel,** the TV ads are not exactly cutting edge.

"I would like you and your readers to know that the Pets.com hand puppet is a direct rip-off of The Independent Film Channel's **'Greg The Bunny' show,"** Beisel writes. "Greg has his own Web site —www.junktapeonline.com/meetgreg.htm.

This goes to show that you can't even trust TV commercials these days. Call me stunned and disappointed.

Just when you thought the Internet couldn't get any more gosh-darn useful, along comes this tip from **Adam Gaffin,** *Network World's* online editor. You, too, can rediscover one of childhood's most soothing diversions — and avoid whatever work you should be doing right now — by spinning the virtual dials of an online Etch A Sketch at www.etch-a-sketch.com/html/onlineetch.htm.

"It's not quite as good as the real thing: Hitting the reset button doesn't give quite the same thrill as turning an Etch A Sketch upside down and shaking it," Gaffin says.

Convey your Internet news items, gossip and time-wasting tips to McNamara at (508) 820-7471 or buzz@nww.com.

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